

The Dock and Harbour Authority

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Editorial

The Port of Corunna.

To anyone of British nationality, Corunna, or in Spanish form La Coruña, inevitably brings up recollections from the history book of the Peninsular War of last century, and of that brave but ill-fated General, Sir John Moore, whose mortal remains were buried hastily near the sea and whose courage and intrepidity are commemorated by a monument in the Garden of San Carlos, close by. Have we not all, in our school days, been familiar with the fascinating lilt and pathos of the mournful ode commencing:—

"Not a drum was heard, not a funeral note,
As his corse to the ramparts we hurried,"—?

It was in 1809 that Sir John, sent into Spain to co-operate with the Spaniards against the French under Marshal Soult, had to fall back in the face of superior numbers, and, finding the embarkation of his troops threatened by the enemy, turned on them and fought a brilliant and successful engagement, in the course of which he fell mortally wounded.

This exploit, among the most celebrated in British military annals, is only one of a number of incidents which connect the port with English history. In 1588, it served as a shelter for the Invincible Armada and, ten years later, the town was captured and burned by the English under Sir Francis Drake. In 1747, and again in 1805, the bay was the scene of naval encounters with the French, on both of which occasions the victory rested with the English.

In the Middle Ages, and probably at an earlier period, the town was called Caronium, from which it is not difficult to trace the evolution of its present form. The harbour has always been of importance, both from its situation and its capaciousness, being well sheltered and easily approached, with depth and accommodation for the largest vessels. Strategically, it occupies an advantageous position on the North-West Coast of Spain, in close proximity to the track of vessels trading between Northern Europe and America, as also to the Mediterranean. There is considerable passenger traffic to Cuba and South America.

These preliminary notes will serve to introduce the article on page 177, which, with the plan and details forming the illustrated supplement, have been courteously furnished by Senor García de Dios Linares. Two years ago, we landed at the port for a stay of a few hours and had the opportunity of seeing, in an incomplete state, some of the works described by Senor de Dios. Since then, the tragedy of Spain has been writ large in the daily press, and the sympathies of English readers go out to a people passing through the throes of a terrible ordeal, from which it is to be hoped that they will emerge with a renewed spirit of national unity and an enhanced inspiration for progress and development.

The Problem of the Smaller Ports.

In our March issue, we commented upon the recent development of coastwise shipping traffic and its effect upon the prosperity of the smaller British ports, as instanced by the remarkable rise in the trade of Norwich, which was described by Mr. W. J. Everard in his address at the Norwich Guildhall. The improvement, generally, in the coastwise trade of this country has been a welcome feature of shipping returns during the past few years and Sir Alfred Read took the opportunity of his Presidential address in November last to the Institute of Transport to urge an increased measure of support from the Government for this branch of the shipping industry. In the

course of that address, he alluded to a report on the accommodation and facilities at the smaller ports which had been prepared by Messrs. Wilton and Bell, of Westminster, for the Coastal Trade Development Council. Through the courtesy of the Council and its President, Admiral Lord Cork, we are enabled to publish this report in our columns and a first instalment appears on page 191, with an introductory article by Lord Cork.

A discussion of the matter is opportune, not only in its relation to port economics in this country, but in its bearing on the question of national defence, which is prominent in everybody's mind at the present time. It is rightly and properly represented that the maintenance of the smaller ports—or rather of a selected number of the more suitable—is a national responsibility in view of the importance these ports would acquire under war-time conditions, when the concentration of shipping in a few large ports could only be a source of menace and peril both for the mercantile fleet and for the national supplies of food from abroad.

Lord Cork endorses the plea put forward so earnestly by Sir Alfred Read for Government support of coastal shipping. His article will be read with interest by those who are no less concerned in the welfare of ports engaged in coastal trade. The intrusion, or rather the accentuation, of foreign rivalry, tolerated without restriction along the British seaboard, makes matters very difficult for the native shipowner. It is worthy of note in this connection that the London County Council have recently adopted a clause in their specifications requiring materials brought to their depôts by sea to be carried in British bottoms. This is in accordance with the practice in the United States, which prohibits inter-coastal transit of goods in foreign craft. However regrettable as a restriction on freedom of water carriage, some such step seems almost inevitable for the preservation of coastwise traffic in British hands.

Ocean Transport.

In his Paper on Recent Developments in Ocean Transport, read before the Institute of Transport on April 12th, Sir Thomas Royden confined his observations to the domain of the ship, appropriately so, no doubt, in view of his long and influential association with shipping affairs. Still, it is a matter for regret, that he did not find time or occasion for alluding to the part played by ports as an essential adjunct to ocean transport, without which shipping activities would be carried on at a very serious disadvantage, if they could be carried on at all.

Sir Thomas described the radical changes which have taken place in overseas transportation arrangements in recent times, contrasting in the first place, the striking difference in passenger accommodation under present conditions with that which prevailed in the recent past. As regards the methods of transport for cargo, which he said, had changed but little, he merely mentioned the development of the trade in refrigerated produce, without alluding to improvements in freight handling, though a good deal could have been said on this head, more particularly, of course, as regards quayside appliances. The main body of the Paper was concerned with ship construction and propulsion, which is somewhat outside the purview of this Journal. Sir Thomas deprecated the demand for quicker transport, except in the case of perishable cargo, pointing out the expense incurred in attaining higher rates of speed, which inevitably resulted in a decrease in economy without much compensating advantage in the saving of time.

*Editorial—continued***Port Labour Registration in Scotland.**

The Board of Inquiry appointed by the Ministry of Labour to investigate the circumstances giving rise to difficulties in making or operating schemes for promoting greater regularity of employment in the port transport industry at Glasgow and Aberdeen, have concluded their sittings. In perusing the reports of the proceedings contained in the last and current issues of this Journal, our readers cannot fail to be struck by the pronounced antagonism of the men and their unions to registration in any shape or form. It is a feeling so strong as to amount to resentment at the mere suggestion of such a proposal, and, to the unbiased observer, is unaccountable, unless due, as has been alleged, to some underlying conviction that registration would lead to the disclosure and enforced cessation of illegal and fraudulent practices in connection with claims made on the Unemployment Insurance Fund. To call registration, as did the president of the dockers' section of the Aberdeen branch of the Transport and General Workers' Union, "industrial conscription" is an abuse of terms, and merely indicates unreasoning prejudice and hostility. Neither can the assertion of another trades union official at Glasgow that "immediately war is declared, the registered docker is a marked man" be justified by any logical argument.

It came out in the course of the Inquiry that there have been numerous cases of the use by applicants of fictitious names and addresses for the purpose of securing emergency unemployment insurance books, and the Ministry are naturally anxious to put an end to this grave irregularity. The Board, in conducting the Inquiry, have been very patient in their endeavours to understand the men's point of view and to elicit any valid ground for their opposition to registration. They were, however, baffled by the attitude adopted by the labour unions, which, when viewed in the light of the serious ministerial allegation, is not altogether creditable to the men's leaders, who should be the first to discountenance anything of the nature of fraud and deception in connection with the administration of the public funds.

The efforts of the Board to secure agreement of masters and men by private conference and negotiation have so far been unsuccessful, but the matter cannot be allowed to drop. Either registration will have to be instituted compulsorily, or some means must be found for suppressing an intolerable state of affairs, such as exists at the present time. The men's leaders will be well advised not to run counter to public opinion in the matter.

Oil in Coastal Waters.

The action taken recently in the House of Lords by the Earl of Ilchester in asking the Admiralty and the Board of Trade to consider the urgent importance of improving facilities in harbours for cleansing bilges and tanks of oil-burning and oil-carrying vessels with a view to lessening the pollution of coastal waters, calls attention to another serious aspect of the evil of escaping oil, which, in last month's issue, was exemplified in no uncertain manner by the account of the outbreak of fire in Poole Harbour.

That mischance was due to petroleum spirit. The subject of Lord Ilchester's complaint was heavy oil, which though having a lesser degree of inflammability, is nevertheless a public nuisance, in that, apart from risk of fire, it causes contamination of bathing beaches and threatens bird life with wholesale destruction. The Earl of Onslow described it as "a growing nuisance." Happily, Lord Ritchie, intervening not only on behalf of the Port of London Authority of which he is chairman, but also speaking for port authorities generally in this country, was able to assure the House that the facilities actually provided at ports were in excess of demands.

Earl Stanhope, who replied for the Government, pointed out that it was no good providing further plant if it was not used more than it had been in the past. This obviously passes the responsibility on to the shipmasters and shipowners, and the public would be interested to know to what extent (if any) the use of oil separators is avoided, or neglected, where such appliances are definitely available. Most, if not all of the more important shipping companies find it an economical proposition to equip their vessels with separators, and it is practically only in the case of smaller craft, and vessels less well found, that the possibility of omission or neglect to carry out the process can arise. But, even here, any tendency to carelessness or indifference is counteracted by a very stringent statutory provision forbidding the discharge of oil-polluted water into dock and port areas. The Admiralty, setting a good example, have decided to provide separators in all the larger ships now being built and have issued instructions that no ship must discharge oil within 50 miles of the coast. For a completely satisfactory removal of the nuisance, however, it is essential to secure international co-operation, and joint action by all countries possessing merchant fleets is very much to be desired.

Port Passenger Traffic.

We have felt it a duty to call attention in the columns of this Journal to the lower standard of passenger accommodation adopted at British ports compared with certain ports on the Continent of Europe. The personal comfort and convenience of travellers scarcely seems, as yet, to have received the same degree of attentive consideration which is given to them abroad, and, indeed for that matter, during actual transport in this country. Allowance must, of course, be made for the particular circumstances of each case and for a number of incidental factors which largely prevent the attainment of a desirable ideal, but, that there is some inexcusable indifference, occasionally at any rate, to the feelings of passengers is evident from the following extract from the Irish Letter in the *Sunday Times* of March 14th:—

"It is to be hoped that no important personage whom it was desirable to welcome and impress arrived by the mail boat last Thursday morning. An easterly gale was raging, and, for better security and protection, the boat berthed and the trains drew up at the departure side of the pier. Not so the Customs officials and their tables. All the passengers with their baggage were compelled to journey at six in the morning round the uncovered head of the pier, exposed to the open force of a blizzard, and back again for the purpose of Customs examination. This was an effort even for the young and lusty; how the children and infirm managed it is a wonder. It would be interesting to know how much duty was collected on this morning. In such conditions could not the officials have changed their pitch out of sheer compassion for the travelling public? Possibly the authority of some high official in Dublin smuggling between the sheets was necessary."

The foregoing extract, of course, does not convey, and is not intended to convey, any reflection on the arrangements obtaining at a large majority of ports in the British Isles, at some of which commendable enterprise has been shown in the provision of improved accommodation. It indicates the occasional lapse of thoughtful consideration which means so much to the travelling public.

Mercantile Shipbuilding and Trade Returns.

The quarterly returns of Lloyd's Register of Shipping to the 31st March, make satisfactory reading. The statistics regarding merchant vessels show an increase of 50,812 tons in the work in hand, as compared with the figures for the previous quarter. The present total of 1,014,454 tons under construction exceeds by 172,093 tons, or more than 20 per cent., the tonnage which was being built at the end of March, 1936, and is the highest quarterly total recorded since September, 1930, and the first since that date to exceed a million tons. It exceeds considerably the aggregate tonnage now under construction in the four leading countries abroad.

It is also satisfactory to note that British exports during March, valued at £43,469,623 reached the highest figure since November, 1930. Trade in the first quarter of the present year showed a substantial increase over the corresponding period of last year in reference to imports, exports and re-exports. Exports of raw materials were up by nearly £3,000,000 and the largest item under this heading was coal. Shipments of coal to Italy have been resumed. Exports of wool were also up by £1,235,000.

The pronounced increase in imports during the quarter is attributable to heavy purchases of raw material which, of course, is an eminently satisfactory feature.

Tyneside Improvements.

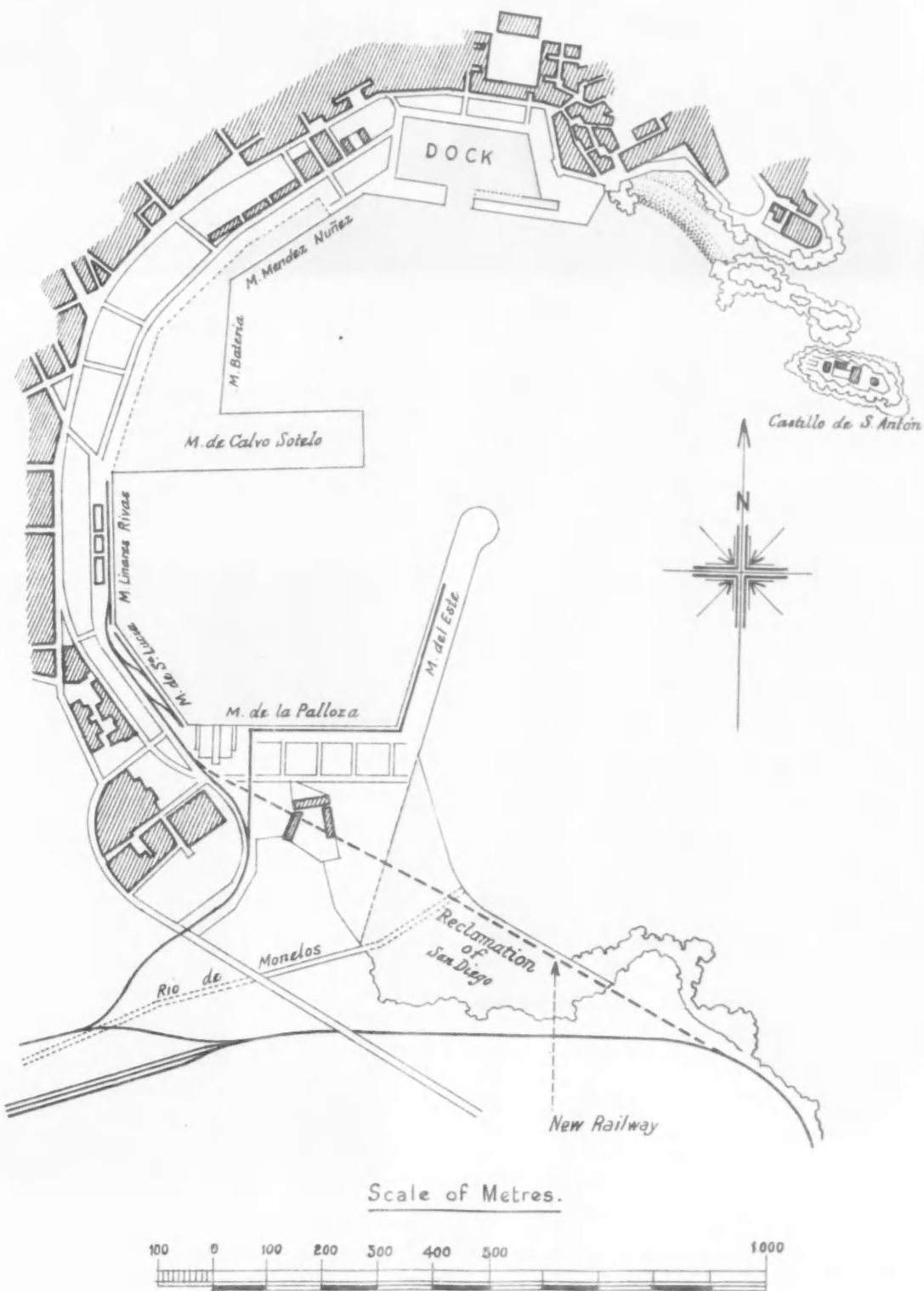
Arrangements are in hand to clear four derelict sites on the banks of the River Tyne and to make them attractive for industrial development. The Tyne Improvement Commissioners have been allowed a Government grant of £40,000 towards the work of clearance.

The Port Facilities Committee, following upon the Commissioners' purchase of Tyne Dock from the London and North Eastern Railway Company, which officially comes into effect on the 1st May, have considered a report from the Chief Engineer on a scheme for the construction of a riverside quay at an estimated cost of £636,600. The plan shows a transit shed, coal loading and bunkering arrangements and cranes for discharging iron ore. The channel from the sea to the site of the contemplated quays will require dredging so as to increase the depth of water from 30-ft. to 35-ft. at low water, and the cost of this is estimated at £100,000. The recommendation of the committee was to the effect that the Commissioners' engineer should confer with Messrs. Rendel, Palmer and Tritton, of Westminster, who are joint engineers with him for the quay construction works, and that a scheme with detailed plans and estimates should be submitted in due course.

PORT OF CORUNNA.

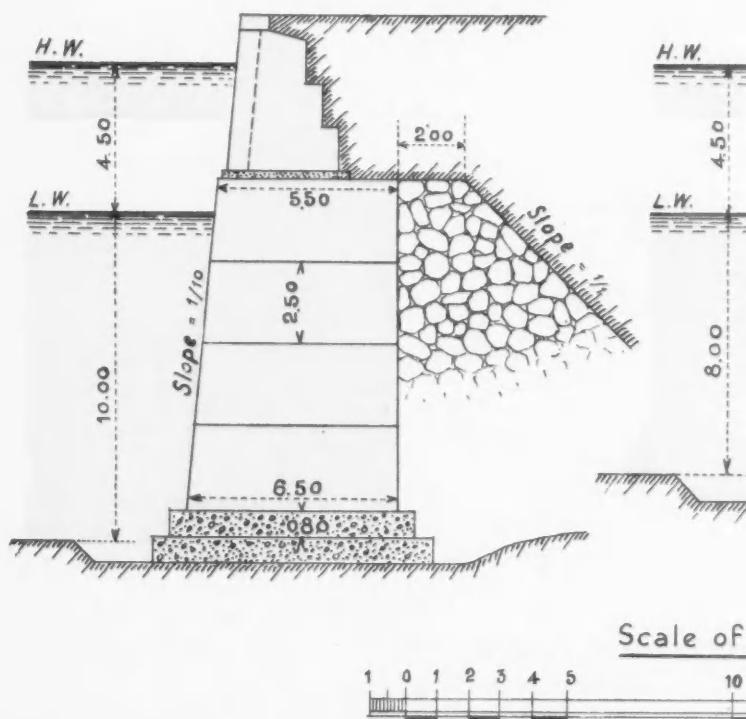
IMPROVEMENT & DEVELOPMENT WORKS.

ENGINEER DIRECTOR;— SENOR EDUARDO GARCIA DE DIOS LINARES.





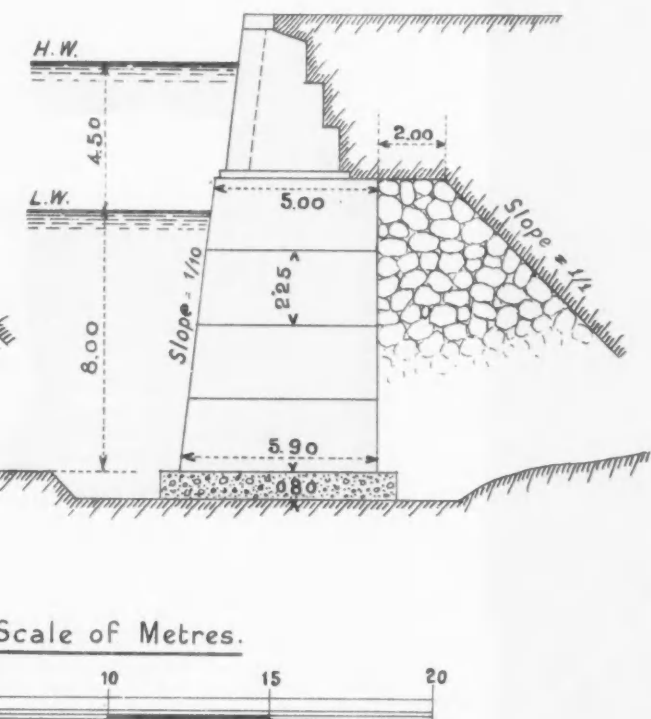
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KEY MAP



NEW QUAY WALLS.



The Port of Corunna

By EDUARDO GARCIA DE DIOS LINARES, Engineering Director of the Port

(Translated from the Spanish)



View of the Inner Harbour.

Historical.

IN consequence of its situation and its excellent natural conditions, the Port of Corunna has occupied an important position from the very earliest period of its history.

It was, first of all, invaded by the Celts, who implanted in the locality a civilisation superior to that of the indigenous natives, and introduced into the country its first elementary ideas of commerce.



Tower of Hercules (Lighthouse).

Subsequently, the Phoenicians enhanced the reputation and importance of the port and erected at its entrance the lighthouse, called The Tower of Hercules.

The Phoenicians were succeeded by the Greeks and the latter, in turn, by the Romans, who devoted considerable care and attention to the port and restored the Tower of Hercules during the reign of Trajan.

The Roman occupation was followed by that of new invaders and other races contending for its possession, attacks by

Norman pirates being numerous and repeated. With a view to defending themselves from these invasions, the natives decided to migrate farther inland and they actually settled down at the extremity of the estuary where they continued till the XIIIth Century, when Alfonso IX. restored them to their original habitat.

In the year 1589, the port was blockaded by the English, headed by a flotilla under Admiral Drake, and supported by a landing army of 12,000 men under the command of General Norris.

In the reign of Carlos III., the Tower of Hercules was rebuilt in the form it possesses at the present day.

In the year 1809, English troops under Sir John Moore embarked at this port, after waging the very brilliant battle of Elvina against the armies of Marshal Soult; in the engagement of Corunna, the illustrious General, Sir John Moore lost his life and his ashes repose in a simple tomb zealously preserved in the Jardín de San Carlos, in this town.

Up to the middle of the XIXth Century, no real building work of importance was carried out at the harbour, the erections then extant being limited to the fortifications intended for the defence of the place, including certain inclines and landing stairs for the use of the forces, these being in turn made use of by travellers, as also for the operations of loading and unloading merchandise.

The inception of really important measures to modernise the port dates from the establishment of the Junta de Obras del Puerto (Harbour Works Board) which took place in the year 1877, this Board since then taking control of the erection, maintenance and working of the various undertakings and services.

General Description of the Harbour and of the Port Services

The harbour is accessible even during the most tempestuous weather, is perfectly lighted and equipped with buoys; conspicuous at its entrance, looms the famous Tower of Hercules, already mentioned, in which has been installed a lantern of the highest power, with a range of 40 miles; the entrance is readily negotiable in all weathers both by day and night and complete security is afforded to vessels anchored within the harbour or moored at the piers.

The quays erected under previous contracts are those of del Este, Palloza, Santa Lucía, Linares Rivas and Darsena de la Marina; these have all been put under municipal supervision and have depths alongside of 6 to 8½ metres at equinoctial low water. The maximum range of the tide in the harbour is 4.50 metres. All quays are equipped with steam and electric cranes of up to 20 tons capacity.

The total area of the quay surface and depositing space exceeds 10 hectares (about 25 acres).

For the supply of coal, there is a dépôt provided for both home and foreign coal, exempt from Customs Duty and located within the Deposito Comercial, being managed by the Asso-

Port of Corunna—continued

ciation of Steam Fishing Vessel Owners, who also run various depôts for native coal.

There is in operation also a special conduit system for liquid fuels, consisting of three pipes, two of 203 mm (8-in.) internal diameter, for gasoline and petroleum, and one of 254 mm. (10-in.) for fuel oil; each of these pipe-lines has three points of discharge at the quay of La Palloza and one at that of del Este.

At la Darsena (inner harbour) there are four slipway cradles.

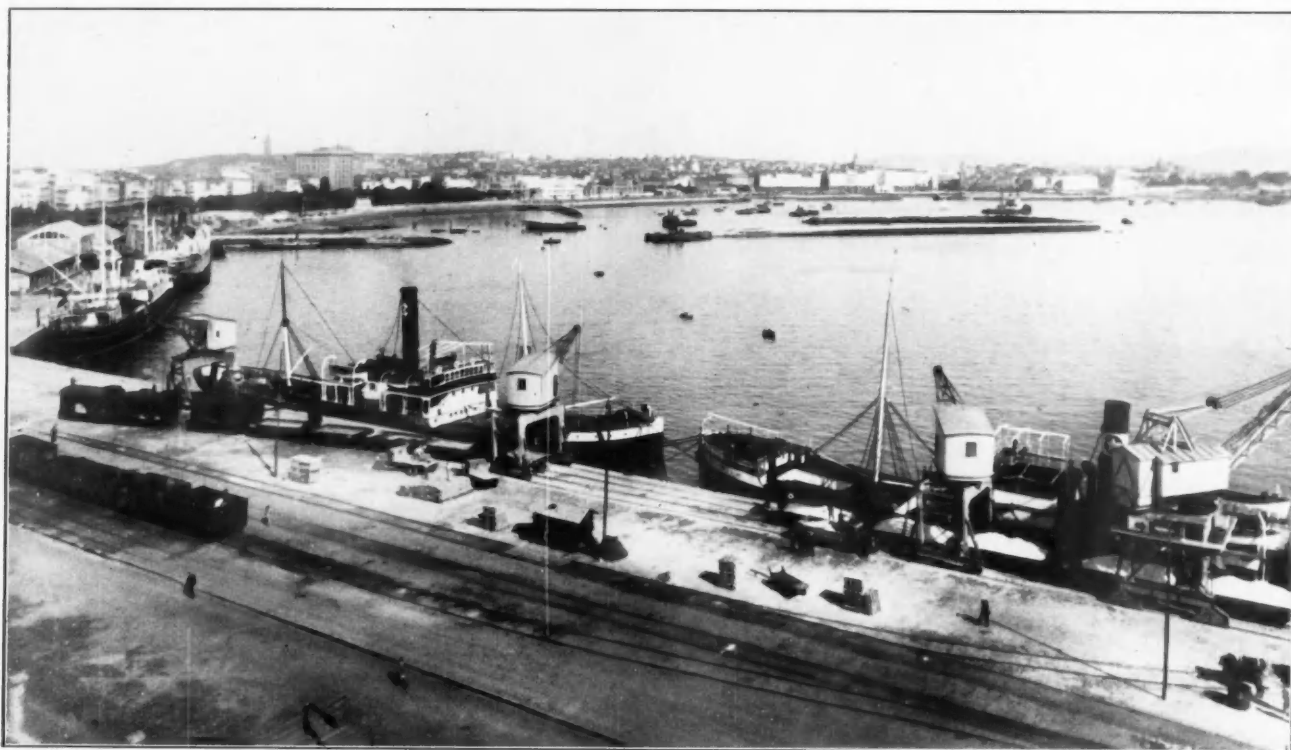
The port is provided with a rail track connecting it with the railway station of the town which forms the principal terminus of the railway line to Madrid.

The annual movement of goods at the port is estimated at 400,000 tons, and the quantity of fish discharged in the harbour exceeds 20,000,000 kilos (44 million lbs.) yearly.



Reclamation filling of the Quay de la Bateria by the Dredger "San Juan."

Steamer Quay, as well as of the breakwater and promenade along the sea front of San Diego, the estimated cost of which



Santa Lucia Quay, and in foreground Calvo Sotelo Quay, during construction.

Recent Installations.

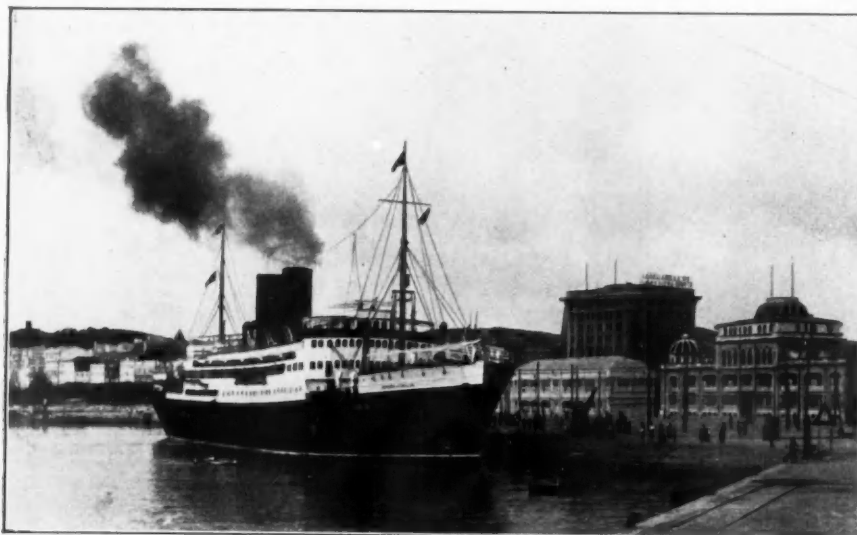
Among the undertakings at present in course of construction, special mention must be made of the Transatlantic

is, approximately 16,000,000 pesetas. The contractors for the work are the Sociedad General de Obras y Construcciones (General Works and Building Company).

Of this development programme, there have so far been completed the walls and breakwaters for the quays of Méndez Nunez, Bateria and Calvo Sotelo, while the breakwater of San Diego is in course of construction.

Of these quays, the two first-named have a depth of water alongside of 8 metres and that of Calvo Sotelo one of 13 metres, at equinoctial low water. These piers comprise a substructure of blocks of cyclopean concrete with a super-structure of masonry; in the mixing of the concrete for the blocks, the following proportions were observed: 0.950 cubic metres crushed stone, 0.500 cubic metres sand and 403 kilogrammes Portland and quick-setting cement in equal parts. These blocks of one cubic metre are made of 75 per cent. concrete with 25 per cent. bricks embedded systematically within the concrete mass. The work has advanced without any hitch and is at the point of completion.

For the quay front of San Diego which is situated above the estuary of the Río de



Mendez Nunez Quay.

Port of Corunna—continued

Monelos (Monelos River), there is being planned a new branch of the railway to connect up with the harbour, which will be an improvement on the present one, as a siding and various level crossings will be eliminated.

Surfacing operations have further been completed at other quays representing 33,000 square metres of paving.

Various other schemes have also been approved, among which may be mentioned the following: The closing of the passage of San Anton by linking this citadel up with the mainland; the acquisition of a shunting locomotive and 6 electric

trolleys of 2 tons; a slipway for vessels up to 800 tons; a transformer station for electric power, and 6 electric cranes of 3—6-ton capacity, as well as other innovations of less importance, which will substantially ameliorate the services of the port.

The chairman of the Junta de Obras del Puerto, referred to in the foregoing is, at present, D. Federico Fernandez Saz, and the sagacity and initiative that he has manifested in office resulted in his being unanimously re-elected at the general meeting held in the month of July last.

Freight Handling in the Argentine and the Pacific

Recent Installations

The following are summaries of two papers dealing with mechanical equipment for the handling of freight, read at a Meeting of the Manchester and Liverpool District Section of the Institute of Transport, on January 22nd, 1937. Each author had been in charge of the construction of the equipment he described.

I—Improvements in Grain Handling Facilities at Bahia Blanca, Argentine

By J. R. ROWLANDS

The granary constructed for the Buenos Aires Great Southern Railway Company at Bahia Blanca, in the Argentine, besides performing its usual functions has also solved a chronic railway traffic problem.

The Port of Bahia Blanca is situated some twenty miles from the open Atlantic and actually consists of two small ports—Ingeniero White and Galvan. The great bulk of the export traffic consists of grain, principally wheat, the average export traffic being in the neighbourhood of 2,000,000 tons per annum. Prior to the construction of the new elevator, which has a storage capacity of 80,000 tons, the grain was shipped from a number of discharge points scattered about the waterfront. The feeding at these discharge points from the yard where the grain trains were assembled and classified presented many difficulties because the grain as it arrived required sorting on account of its different varieties and condition. This entailed an enormous amount of sorting and re-sorting of wagons, shunting and double handling, with the result that the rate of handling and discharging of grain was seriously slowed up and there was a considerable loss of wagon capacity.

The problems that presented themselves can be summarised under three headings:—(1) the prevention of double handling, (2) the elimination of traffic confusion and delays and the return of empty wagons to the interior without loss of time, (3) the improvement of shipping facilities.

The prevention of double handling was achieved by providing sufficient storage capacity in a single building erected adjacent to the shipping berths and installing adequate mechanical handling equipment to transfer the grain to the ships. The provision of large capacity intake facilities secured the elimination of traffic confusion and delays. The difficulties presented were due to the practice of handling grain in sacks, but were overcome by the introduction of a large number of intake hoppers whereby 200 wagons a day could be emptied and turned round ready for return to the interior. The improvement in shipping facilities was obtained by building a new jetty with four berths for ocean-going ships. Facilities were also provided enabling six ocean-going ships to be loaded simultaneously at the rate of 1,000 tons of grain per hour to each.

The elevator itself is a reinforced concrete building arranged in three main sections: working house, shipping house and main storage. The working house contains a group of 126 bins, the upper portion of the building housing the storing, classifying, preliminary cleaning and distributing machinery. In the lower portion are the secondary cleaning plant and the sack store. The shipping house is situated between the two main buildings and accommodates the shipping elevators, weighers and conveyors forming the first section of the shipping lines continued in the gantries to the ships. The main storage section comprises 108 circular bins and 88 interspaced bins, the building itself being 222-ft. wide, 165-ft. long and

127-ft. high. The grain from the storage bins is delivered to ships by means of a series of belt conveyors arranged in overhead gantries running along the new jetty. Ships can be loaded from these conveyors on either side.

To carry out the operations required for intake, distribution and shipping and at the same time control the route and ultimate destination of each wagon load as received, necessitated the introduction of a complete automatic colour-light signalling system between the various control points.

The elevator has now been in commission for four years and has handled an average of over 1,000,000 tons of grain per annum. In February, 1934, six ocean-going ships were loaded in six consecutive days with a total of 48,864 tons of grain, consisting of wheat, barley, rye and oats. The actual bulk loading time was 42 hours, giving an average rate of 1,163 tons per hour. The smoothness of the handling operations of the present day is in direct contrast to the chaotic conditions which prevailed prior to the building of this elevator.

II—Phosphate Handling in the Central Pacific

By COLIN HOWARD

The island of Nauru, in the Central Pacific, is only 4,692 acres in area, yet it is of enormous commercial importance in that practically the whole island is covered with vast deposits of phosphate of lime. These deposits are probably the richest in the world and are used for the manufacture of super-phosphate required by Australia and New Zealand for fertilisers. Another small island, known as Ocean Island, lying about 160 miles east of Nauru, is also rich in phosphate, and both islands are extensively worked by a body known as the British Phosphate Commissioners, comprising representatives nominated by Great Britain, Australia and New Zealand.

At both islands great difficulty was previously experienced in loading the phosphate to ships as there are no harbours or natural anchorage and at Nauru there is a shelving beach which, even at high tide, is covered only by shallow water. Before the introduction of mechanical handling equipment, loading operations had to be carried out by transporting the phosphate in surf boats loaded from jetties, and this method was both slow and laborious. Extensive mechanical handling, storing and loading plants have now been installed whereby ocean-going vessels lying off-shore can be loaded in the shortest possible time.

At Nauru mechanical bulk conveyors bring the phosphate for the quarries inland to storage bunkers and thence by means of further conveyors it is carried in gantries to two immense cantilever arms built on massive concrete piers on the edge of the reef. The conveyors on these arms at first had a loading capacity of 600 tons per hour but this has since been increased to 1,600 tons per hour. It is now possible with this equipment to bring a ship to the inner moorings and load 8,000 tons of phosphate rock in a single day.

The phosphates are delivered from these conveyors through telescopic spouts to the ships. Owing to the under-tow it is dangerous to bring ships close in-shore, hence the necessity for the long reach of the cantilever arms. The ships are moored off the reef and it is believed that these moorings are the deepest in the world.

At Ocean Island the equipment installed for loading the phosphate to ships lying off-shore includes a massive steel cantilever arm which projects out over the edge of the reef so that lighters being loaded can be moored clear of the heavy surf which breaks over the reef. The loading-out conveyor carried by this arm has a capacity of 180 tons per hour.

*Extracted by permission from the Journal of the Institute of Transport, April, 1937.

Glasgow and Aberdeen Port Labour Inquiry

(continued from page 163)

The Inquiry by the Ministry of Labour Board into conditions of port labour at Aberdeen, the earlier stages of which were reported in the last issue, came to a conclusion with a meeting on March 24th when it was arranged that employers and workers should consider certain suggestions emanating from the Board in an effort to reach agreement on some scheme for promoting greater regularity of employment on the port transport industry at Aberdeen.

We are indebted to the *Aberdeen Press* for the following account of the proceedings:—

Mr. J. M. Irvine, Sheriff of Renfrew and Bute, chairman of the Board, said they would put down in black and white one or two suggestions as to the ways in which, in their opinion, the situation in Aberdeen might be improved. He appealed to the employers and workers to give the suggestions fair and reasonable consideration, and he also suggested that both sides would have a joint meeting with the views of the Board as a basis of discussion.

Sir James Leishman, formerly chairman of the Scottish Board of Health, and Professor T. M. Taylor, Aberdeen, are the other members of the Board.

Mr. Thomas Cooper, president of the dockers' section of the Aberdeen branch of the Transport and General Workers' Union, stated the views of the dockers. They were opposed to registration, which he described as industrial conscription. They were in favour of central booking places, but objected to employment record books.

Professor Taylor—One can see this advantage about the scheme. You would be able to tell who were genuine dock workers and who were the people who were making a convenience of the docks. In what way would prejudice be suffered by genuine dock workers in keeping such a record of a man's employment?

Mr. Cooper said there was prejudice in coupling it with other suggestions. A record book was unnecessary. They felt there was no need for anything other than central booking places.

Professor Taylor—Are you afraid a scheme of keeping a record would disclose a state of affairs you could not hold your heads up to?

Mr. Cooper—We don't fear anything other than being put under any scheme of being industrially mobilised. To put control of our organisation in the slightest degree in the hands of our employers is wrong.

In the course of his evidence Mr. Cooper frequently refuted statements which had been made at previous sittings casting reflections on the efficiency of Aberdeen dock labourers.

Sir James Leishman—Employers have said definitely that dock labour in Aberdeen is very efficient and better than in other places. That stands with me.

Mr. D. T. John, secretary of the Standing Advisory Committee of the Port Transport Industry, who pointed out that Aberdeen was one of a few ports which stood out against a policy of registration, spoke of seeing at Aberdeen docks a number of union men not offering themselves for engagement, and the foreman having to engage non-union men.

"Men refrain from taking employment on certain days," he said, "because it is going to affect their position as regards the Unemployment Fund."

These things could be put right under a scheme of registration.

Councillor J. P. Thom, district secretary of the Transport and General Workers' Union, replied that on certain days men held back from work offered in order to be ready for the expected arrival of certain regular trading ships on which they worked.

Following the conclusion of the Inquiry at Aberdeen the Board returned to Glasgow and on April 5th resumed their sittings there to consider the reception by the employers and men of the suggestion for a negotiated agreement between them. It was found, however, that no approach to a settlement had been reached, and after hearing the representatives of both sides the Inquiry had to be concluded without attainment of the desired result.

The following is an abridged report of the proceedings extracted from *The Glasgow Herald*:—

How the parties concerned regarded the suggestions was explained by Mr. James S. Spencer, chairman of the Glasgow Shipowners' and Dock Labour Employers' Organisation; Mr. J. C. MacLean, secretary of the Scottish Transport and General

Workers' Union; and by Mr. D. T. John, secretary of the Standing Advisory Committee, Port Transport Industry.

Mr. Spencer and Mr. John both urged the adoption of a register of labour to be jointly administered by the employers and men.

Sheriff Irvine intimated that they must take the facts as they were. The Union had two fundamental objections to the Board's suggestions. They objected to an employment record book, and to the proposal that the Union should hand over to the joint committee the power to determine whether or not a certain number of persons were to be added to the Union.

That was in the nature of opposition to registration, and it was for them to consider now whether these two suggestions could not be modified or adjusted so as to produce a workable scheme acceptable to both employers and men.

Mr. P. Ward, chairman of the Union's executive committee: One of our reasons for objecting to registration has not so far been discussed. The world is resounding to rumours of war, and immediately war is declared the registered docker becomes a marked man. He will be taken over by the military authorities, and I object in principle to fight in another war, or to become a conscripted worker.

Mr. John said that he was not going to discuss the merits or demerits of that point, but he thought the board would be satisfied from the evidence submitted from other docks that a register did not place a whip in the hands of employers so that men could be coerced. He had attended the inquiry because registration of labour was the national policy of the dock industry.

Mr. J. M. Denholm, Deputy Divisional Controller in Scotland for the Ministry of Labour, appealed to both sides to co-operate with the Ministry in bringing about better arrangements in Glasgow docks.

"We had hoped," he said, "that a scheme of registration would ultimately be agreed on because such a scheme, among other things, would definitely identify and restrict the effective pool of labour at the docks."

"The Ministry of Labour would prefer to see the industry put its own house in order, but if the register is not adopted other steps will have to be taken without further delay to eliminate the evil of irregularities in obtaining unemployment benefit."

When asked by the chairman if he could provide further information with regard to irregularities, Mr. Denholm replied in the affirmative.

He said that at Kinning Park Exchange, from January 1st to March 31st this year, a total of 12 emergency unemployment insurance books were issued, and of these seven apparently bore fictitious names and addresses.

At Finnieston Exchange from January 5th to March 27th this year 422 emergency books were issued, and 420 of them bore apparently fictitious names and addresses. That was to say, they actually only traced the individuals concerned in two cases.

Sir James Leishman—Is not the reason for dockers using fictitious names because they are making improper claims upon public funds?

Mr. Denholm—I think that is the only logical conclusion we can come to.

Sir James—It is an extraordinary state of affairs.

Mr. Denholm said that the Ministry had determined to ask the employers not to give work unless the docker presented his unemployment insurance card, but they had agreed to the employers' request not to do so until the result of the present inquiry was known.

Sir James Leishman asked Mr. Spencer why this had not been done before, and Mr. Spencer replied that if they refused to employ men who failed to produce their unemployment insurance cards there would be a danger of a stoppage of work at the docks.

If the Government insisted, however, on the production of unemployment insurance cards the employers would do so. All he wanted was to be able to say to the shipowners in the event of a hold-up of work that they were acting under instructions.

Mr. Spencer added that it was impossible for employers to check the names and addresses on emergency cards which were issued by the exchanges.

Mr. MacLean, for the union, said that there need be no danger of the use of fictitious names. Union men had identity cards, and there was no difficulty in presenting them. He alleged that many foremen when engaging labour went out of their way to take on non-union men whom they knew by name and reputation. These foremen were picking the same men every day, and they were bound to come to know them.

"I would suggest," Mr. MacLean continued, "that even if there is going to be exposure the production of unemployment insurance cards or union identity cards should be insisted upon before work is allocated."

After further discussion the chairman intimated that the inquiry was concluded.

The French Lighthouse Service

(concluded from page 161)

By the Director, A. de ROUVILLE

(Translated from the French)

Demarcation.

WHAT is termed "balisage" in France and may be called "demarcation," though no single English word is exactly equivalent, comprises masonry towers, lighted or not, more slender beacons or marking poles of reinforced concrete, of iron (222) or of timber (316), a very small number of floating marks and lastly many buoys, lighted, sounding or ordinary. There are now 415 ordinary buoys and 43 unlighted sounding buoys.

Separate account must be taken of sea-marks (to the

Among those most recently completed, after 25 years of effort, is the one at Nividic, at the south-west extremity of the Isle of Ouessant, which is connected with the island by two electric cables, serving the double purpose, first of conveying current for the lighting and fog-horn apparatus by three spans of 300 to 400 metres and secondly serving as a telfer or conveyor cable for the transport of the attendant staff with greater ease and less risk than by way of the very choppy sea at this point.

As another example of the time which is often required to bring such constructions to completion, may be cited the tower at Bivideaux, between Belle Ile, Groix, Lorient and Quiberon. This tower was completed and equipped with a light in 1914, 29 years after commencement. At this point the problem was to mark a submerged rock covered even at low tide with more than 3 metres (10-ft.) of water.

The endeavours of the Lighthouse Service, in regard to lighted buoys (to the number of 218) have aimed at progressively increasing the dimensions of these buoys, whose capacities vary from 4 to 26 cubic metres. The largest buoys, weighing up to 20 tons and measuring about 20 metres long, have their focal plane at 10 or 12 metres above sea level, which gives them a lighting effect comparable with that of a beacon light or that of a true lightship. The western end of the Sein Causeway and the borders of the Rochelonne plateau, 50 miles to seaward of the Charente channels, have been equipped with such buoys.

These floating appliances often carry sound signals for foggy weather, consisting either of bells (operated automatically or by gas), or of whistles actuated by the swell itself; but these cannot entirely replace proper lightships, the first cost of which and their upkeep are much more costly, because such floating craft are alone capable of carrying really powerful apparatus for sound, submarine and wireless signals. There are only four of these; one off Havre, for the landfall of Transatlantic liners; another in the Straits of Dover, to assist the concentration of vessels passing from the North Sea into the English Channel, and two more in the channels off Dunkirk.

Fog-signalling.

The establishment of lights along the coast may be regarded as having been completed for some time and needing little more than adjustment of detail. But as much cannot be said of fog-signalling, for which navigation is quite rightly crying out more and more.

Powerful sound signalling is effected (in addition to ordinary bells, low-pressure sirens, explosives and acetylene guns) by means of apparatus known as horns, sirens or diaphones.

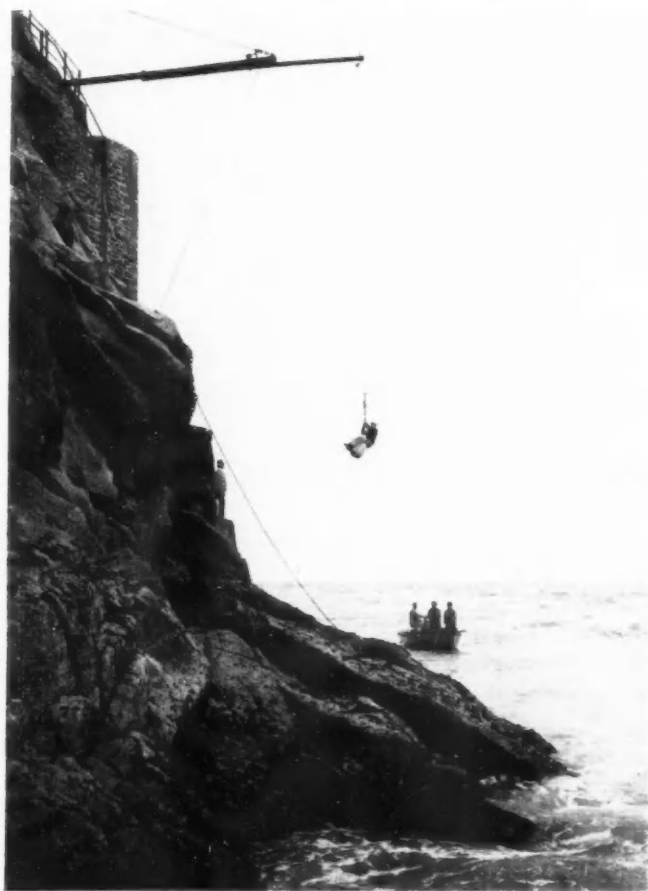
There is a growing tendency to adopt new types of siren, actuated by a small electric motor and no longer by compressed air producing the sound.

There are at present 5 diaphones, 23 sirens and 5 pneumatic horns. More adaptable than these and simpler to instal, especially for dock entrances, are electric oscillators, which are a sort of large loud speaker, actuated by alternating current of musical frequency, the membrane of which, vibrating, gives out a sound. A commencement has been made in the provision of these along the coast.

In regard to submarine sound signals, there is a tendency to replace the old-fashioned bells by oscillators similar to aerial oscillators; these give satisfactory results, especially when placed in groups of at least two.

The number of sound signals has increased three-fold in the last 50 years or so.

As the efficacy of sound signals is necessarily limited, especially for enabling the navigator at some distance from land to determine his position, the Lighthouse Service maintains a certain number (23) of radio beacons ("radiophares"), forming part of a planned system already carried largely into effect, but the completion of which calls for about 10 more, especially in Corsica, and at several intermediate points on the French mainland coast. There is a declared intention to establish special radio transmission stations, the characteristic signals of which and their wave lengths have been chosen with a view to assuring good reception by the rotating frame direction-finding aerials on ship-board with a minimum of interference. It is by means of observing two positions of zero intensity that it is possible to determine with the greatest precision the bearing of the radio-beacon in relation to the ship.



Landing by derrick at "La Vieille" Lighthouse.

number of 226) which are not treated as belonging to the "balisage" system, that is to say, they are not painted in distinctive colours conveying a meaning to mariners, but simply serve as identification marks to give bearings. Such navigation marks may be private buildings or conspicuous natural features, or they may be structures specially erected. They are generally painted white or some colour causing them to stand out from their surroundings.

There are 323 masonry towers, 40 of which carry lights. The nature of the French coast has long been regarded as calling for this form of marking, at least in its more rocky parts, from Cotentin to the Gironde Estuary and on the shores of Provence. This state of things has led to the adoption of standardised though varied methods of construction for such towers, which are generally founded on sea-washed rocks; methods in which the ingenuity, the patience and the courage of the builders have proved to be the factors essential to success. Thus there has been formed and maintained a staff trained in this sort of work, equipped with plant keeping pace with every advance in technical knowledge, having at their disposal motor boats, floating workshops carrying concrete-mixers and air-compressors. The employment of boring tools, cement-guns, efficient winches for transporters from boats to rocks, and caissons of types according with the peculiarities of each site and the personal preferences of the works foreman, all these factors have contributed to effective progress in the construction of these towers.

The French Lighthouse Service—continued

The French Lighthouse Service was already interested in this system, even before the war, and in 1912 had set up three stations (Ouessant, Sein, Havre Lightship) with a wave-length of 120 metres. This was increased, by recent international conferences, to about 1,000 metres, which is a more satisfactory length.

The radio-beacons fulfil two distinct purposes: firstly, to facilitate the approach to land, even in clear weather, along the coast, by transmitting signals every half-hour with sufficient power to be picked up as far as about 200 miles out at sea. Such stations have been installed at Créac'h d'Ouessant, Belle-Ile, La Coubre and Planier.

Certain ordinary radio stations likewise, with the same object, give signals twice every half-hour in clear weather, and in foggy weather operate with an effective range of about 50 miles.



New Self-propelling Lightship.

Endeavour is also being made to perfect an apparatus for alignment by radio. The principle of this is a dual transmission so arranged that two signals meet on the axis of a channel, so that passing from one to the other indicates to the navigator that he is crossing this axis. The reception of such alignment signals is effected by an ordinary wireless telegraphy receiver. It appears that the process of employing a frame aerial gives, at about 15 miles from the station, an indication of the line of the axis, with an error not exceeding about 20 yards. At the same time the determination of such axis of alignment by radio calls for further investigation.

It is likewise by means of wireless waves that it is hoped to control, at a distance of several miles, such sound signalling apparatus as an acetylene gun; a system which will render useful service in enabling the submerged outer end of a reef to be indicated by means operated from an occupied post on land.

This is what the Service is seeking to do round the Ouessant Islands and at Sein in Finistère, according to a programme extending over several years.

General Equipment.

Another matter now engaging the attention of the Service is the adaptation of its plant, both fixed and floating, to the increase in size and power of the various aids to navigation. For example, certain waterside yards have to be remodelled to handle a greater volume of gear and especially light buoys of larger dimensions.

The floating equipment is also being modernised by the provision of larger buoying vessels (170-ft. long, 750 tons) of greater speed (11 knots, 1,000 to 1,300 h.p.) and driven by Diesel-electric motors. These vessels have a fore-deck, on which the largest buoys can be carried, and a 15 to 20-ton crane by means of which they can, in good weather conditions, be placed in the water.

The programme of modernisation of the floating plant extends to the lightships, with a view to equipping each of these units with a screw propeller, and taking advantage of the adaptability of the internal combustion engine to give electric light, to operate submarine oscillators, radio beacons and radio telephones; also to improve the accommodation in the crew's quarters, especially by the inclusion of cold chambers for preserving fresh meat. A modern lightship of this description would require a crew of 8 on duty and 5 resting ashore.

Relationship with other Services.

Whenever desired by Colonial authorities or other interested bodies, the National Lighthouse Service undertakes to advise upon the improvement of lighting and buoying in the overseas dependencies of France—her colonies, protectorates and mandated territories. This collaboration is effected by means of consultations, by tours of inspection and by supervision of the supply of materials and execution of works for the establishments abroad.

Such co-operation is particularly useful in determining the characteristics of lights and other marks, in order to avoid confusion with neighbouring countries and to maintain a certain uniformity in the marine signalling that comes under the jurisdiction of the French government. Although the Service is not charged with the direct administration of such signalling in the colonies, it does exercise a degree of influence along more than 19,000 miles of coastline.

The French Service has for a long time been in excellent relations with a certain number of foreign services, and mention may be made first, in order of length of association, of the Corporation of Trinity House and of the Northern Lighthouse Service. There are records of correspondence between the British and French Services as far back as the time of Léonor Fresnel. The French Service has likewise collaborated with the Dutch Service fairly continuously, particularly during the period of the latter's reorganisation in 1908. It has now, especially since the International Navigation Congress held in London in 1923, entered into relations with the greater number of Lighthouse Services throughout the world.

The exchange of information is assured by communication of the Paris depot with 38 countries; whereby it becomes possible for every one of these to follow the changes, new ideas, etc., originating elsewhere.

Apart from such exchange of information periodically and annually, there are conferences, held every four years or so, which bring together the senior officers of the Services in technical consultation and in the discussion of papers prepared on various aspects of the work. These meetings are arranged either in connection with an International Navigation Congress or independently; such was the case with the special Conference held in London in 1929 on the invitation of Trinity House; the following one took place in Paris in 1933; the next is to be in Berlin in 1937.

This intercourse has facilitated the study of many questions of interest to navigation, such as that of the standardisation of the forms of marine signalling.

The exchanges of views organised by the League of Nations succeeded to some extent, at the Lisbon Conference of 1930, in reaching agreement upon certain signals regarding harbours, tides, depths, movement of ships, storm warnings, etc., an understanding upon lightships and recommendations as to the characteristics of lighthouses and radio beacons.

The most important of the questions still outstanding is that of the characteristics of buoys and marks, which was the occasion of the last preliminary conference in London in 1933. It is to be hoped this will yet lead to an agreement, which appears very desirable and will be to the relief of mariners who are now obliged to learn and assimilate at least 25 different systems.

Other questions of a more special nature have been settled direct between the services concerned, thanks mainly to the good understanding which prevails among them. Such questions have included the re-allocation of the characteristic signals of radio beacons, which might interfere with one another at long range if their time tables, wave lengths, intensities, frequencies and identification letters were not allotted by common consent. For this purpose Conferences have been held successively in London (1929), in Stockholm (1931 and 1933), in Paris (1933) and in Bordeaux (1934).

Further effort is being made, following on the technical conference in Paris, to bring about an accord in the definition of the characters of lights and of their descriptions, with a view to simplifying their recognition by the navigator and helping on the work of the technical services.

Such are the diverse international activities in which the French Lighthouse Service is participating in addition to its responsibilities in France.

We have received from the Port of London Authority, a copy of their Sailing List and Shipping Guide. The Book is well arranged for quick reference and is full of information of interest to everyone connected with Shipping or the Export and Import Trades. Copies price 3d. (postage extra) or 4s. 6d. per annum (postage free) can be obtained from Publicity Dept., Port of London Authority, London, E.C.3.

Some Considerations of Problems affecting Port Management

(continued from page 158)

Discussion on Paper by Sir LIONEL A. P. WARNER, C.B.E., M.Inst.T., read before the Institute of Transport in London on January 11th, 1937

Sir David J. Owen said that for the most part he cordially endorsed the general conclusions at which the author had arrived. Respecting what Sir Lionel Warner had said as to the increased size of many of the coastal vessels having rendered the accommodation at the smaller ports to some extent redundant or of less value, he (the speaker) was always troubled by the problem of these smaller ports. He believed that a good deal could be done to render many of them more useful to the community as a whole, but it was a question which demanded very serious consideration.

Sir Lionel said "I suppose that no port authority will maintain that all parts of their particular port are thoroughly up to date." In the case of London, which was an older port than most, there were many parts of the port which were not up to date; there were parts which dated back to the days of the old dock companies, over 130 years ago, and although premises of that age might have been maintained in good condition it could not be said that they were in line with modern requirements. He agreed that not much was wanted in the way of extensive new dock construction, but the modernisation of the older portions of docks presented a profound problem to many dock authorities.

He thoroughly agreed with the general trend of the author's remarks on the policy of planning for the future in connection with warehouse accommodation.

What Sir Lionel had said about the grouping of ports was most interesting. He (the speaker) had referred in the past to the co-ordination of docks, but he found that some people regarded co-ordination as implying something sinister and therefore he preferred to speak of co-operation, an innocuous term which implied friendly working together for mutual advantage. In listening to what Sir Lionel had said about grouping he saw a great mind grappling with a great problem and realising dimly the truth of what had been advocated in the way of co-ordination, but, like a sound conservative, Sir Lionel seemed afraid to admit to himself that it was right; he said "I suppose the idea"—i.e., the idea of grouping—"springs from a desire to eliminate competition in its various forms and to effect economies both in capital expenditure and overhead charges." He could assure Sir Lionel that that supposition was correct; the idea underlying all questions of co-ordination and grouping was to benefit the community at large and that could be done only by providing better service at a lower cost. In his conservative way, not wishing to allow the idea to obtain too firm a hold on him, the author went on to say "It is a far reaching conception." It certainly was; all great ideas were far reaching conceptions. He continued: "but so far as I know we have not had even the barest outline as to the method of adoption." He (the speaker) could give him more than the barest outline, and so could many other people; indeed, Sir Lionel could do it himself if he gave a few minutes thought to it. That was not an argument, therefore, against the idea of grouping. It was certainly a very difficult problem, but all the great revolutions and movements for the good of humanity had involved important and difficult problems. Sir Lionel continued "I do not think that grouping is a practical proposition at the present time," but then came a ray of hope, on which he was to be congratulated, for he went on to say "The ground must be prepared before the final goal—grouping—can be attained," adding, with a return to caution, "that is, if it is desirable." He (the speaker) felt that if Sir Lionel would give a little more thought to the problem and allow it to simmer a little longer in his mind, he would come out as a full-blown co-ordinator, co-operator or grouper—whatever one liked to call it. The author quoted a shipping paper as saying "In this country there is no need for a central port administration, but there is need for a port policy," but what was involved in the idea of co-operation but a settled port policy? Later in the same section of the paper, Sir Lionel said: "I referred a little earlier to preparing the ground, and quite apart from grouping I think it is most desirable that the ports as they exist today under their varying administrations should come to some agreement on certain matters." He thought, therefore, that his friend Sir Lionel would be prepared to "go the whole hog" with him as a co-ordinator and grouper of ports.

He thoroughly agreed with what was said in the next section

of the paper with regard to working hours in ports. He had argued this question with both shipowners and labour. As Sir Lionel rightly pointed out, it was the height of absurdity that ships and docks, both of which cost such enormous sums of money, should be idle and earning nothing, the ships for a proportion of their time depending on the length of their voyages and the docks for the greater part of their time. People who owned valuable machinery of other kinds, in factories and so on, usually tried to run it 24 hours a day, perhaps with a short break at week-ends. The point was one which deserved the gravest consideration. As in the case of grouping, there were difficulties and prejudices to be overcome, but it would mean that the dock accommodation could be used more intensively and, in consequence, the overhead charges could be spread over a greater volume of traffic, which would mean lower rates to dock users.

He felt inclined to endorse Sir Lionel's animadversions upon the railway dock owners, who indulged in such unfair competition; but Sir Lionel, as an old railway man, knew more than he did himself about the inward wickedness of railway companies.

Mr R. P. Biddle said there would be general agreement that much had been done in regard both to dock construction and to the modernisation of existing docks. Dock-owning authorities were sometimes accused of an unimaginative conservatism, but that accusation could hardly be justified in view of past records. If he might take Southampton as a typical example, that great ship the "Queen Mary" operated safely and with convenience today from a dock which was designed and constructed over 25 years ago, long before ships of 80,000 tons and requiring a depth of 40-ft. of water were contemplated.

It would universally be agreed that building should be for something greater than immediate needs, and, in considering the question of the development of new dock facilities and the modernisation of existing ones, it would be necessary to take into account the considerable growth in air transport which was going on today and which would no doubt be accelerated during the next few years.

He had been interested to hear of the author's experience at Liverpool respecting the export of cargo had not been so fortunate. Whilst it was true to say that export cargoes did not present such great difficulties as import cargoes, generally speaking shippers could give much greater assistance by ensuring that in all cases their goods were clearly labelled for the ship and the port for which they were destined. This was of vital importance in dealing with traffic in which the time factor played so important a part.

The current view that facilities should be provided in anticipation of demand rather than when demand became acute applied with greater force, in all probability to docks and harbours than to anything else. An outstanding illustration of the wisdom of that policy was to be found in the new dock scheme at Southampton, which was commenced at a time of deep depression, but in anticipation of trade revival.

The author gave statistics relating to the amount of accommodation needed for meeting present-day requirements, and he (the speaker) had been particularly interested in the figures for fruit. This commodity seemed to have caught the public favour, possibly due to energetic propaganda, and in the case of Southampton the imports of fruit from South Africa alone had risen during the last eight years by no less than 210 per cent., an increase which obviously could not have been dealt with but for a considerable extension of the dock premises, not so much because of the added accommodation required by the steamers bringing the produce, but in order to meet the enormously increased demands caused by the large amount of sorting to mark, a problem which he was sure was just as acute at Liverpool as it was at Southampton. A further argument in favour of the additional accommodation which had been provided was that, speaking again of Southampton, although the number of vessels dealt with in 1935 was almost precisely the same as in 1925, the gross tonnage during the same period had increased by over 46 per cent.

He noticed that the author had made no reference to the dock owner's ever-present bogey of dredging, a liability which

Some Considerations of Problems affecting Port Management—continued

tended to increase year by year, particularly in the case of ports which had the privilege of accommodating the larger liners of the present day and which had to provide a depth of water of 40 to 45 ft. alongside the quay and a channel of sufficient depth often extending for several miles.

Sir Lionel made a most interesting suggestion with regard to dock labour. A phase of that subject which had always appealed to him (the speaker) as being of particular importance to shipping companies was an extension of the principle of what he called direct labour. At Southampton the Southern Railway, generally speaking, provided the labour, for they engaged and supervised the labour for receiving the goods from the ship and loading on rail or road, but in recent years the principle had been extended and the railway company also engaged the necessary labour for doing the stevedoring work on board ship. This unification of the whole of the operations of landing and loading, which eliminated dual control, had certainly had a beneficial effect by reducing the cost of what, under existing conditions, were expensive operations.

Mr. D. Ross-Johnson said that every dock manager had been faced with the problem of warehousing near the ship. It was desirable that the ship should be discharged as fast as possible and it was a quicker business to get the goods out of the ship's hold than it was to have them sorted, distributed and sent away. However big the transit sheds might be, it was nearly always found that a ship was held up from time to time to make floor space to receive the cargo. He noticed some years ago that Liverpool had largely solved that problem by providing more upper floors to the transit sheds into which the goods could be sent on warehousing terms and the quay and floor of the transit shed be cleared rapidly, so that when one ship had finished the next could follow. At Bristol some years ago the same plan had been adopted and developed in regard to grain cargoes, so that the ship could work out its grain as fast as the elevators could move it; the grain went over conveyor hands into warehouses at the back, out of the way, and there the merchants took delivery at their leisure.

The problem was to what extent that reserve accommodation, which cost much money, should be provided. As had often been pointed out, the movement of goods in this country was becoming retail to an increasing extent; it was slowing down and becoming more expensive and the trader always seemed to expect the railway or the port authority to bear the extra cost of the detailed work involved. That was brought home very forcibly to anyone who went to foreign ports such as Rotterdam, Antwerp or Hamburg and saw large cargoes there being torn out of the ships and thrown into barges which were half the size of the ships themselves, without any sorting or counting, and sent right away from the ship. Naturally in such circumstances the charges were less, and that was one of several reasons why such an unfavourable comparison was often made of port charges in English and in foreign ports.

Many members would recall the discussion at the Glasgow meeting of the Institute on Sir George Buchanan's paper,* where the question was raised whether or not docks should be self-supporting. The trust ports had to pay interest on their bonds. It was sometimes suggested that as the bondholders were getting their money they had nothing about which to complain; "Why," it was asked, "should they complain of the non-trust ports taking such trade as they can?" The answer, of course, was very simple; it was not only the bondholder who wanted his money, but the user of the port wanted to have the advantage of reasonable profits being made by the port so that his own charges might be reduced and so that he might obtain the further facilities which he required. The trust port, of course, had to afford facilities out of its own resources, while the competing railway port did it out of the resources provided by the shareholders in the railway. Moreover, very often the railway port not only provided those facilities for the trade with which it had been accustomed to deal, and which perhaps no one grudged it, but when it saw some other trade being dealt with in a neighbouring port it could not resist the temptation to provide facilities to attract that trade to itself also. He did not propose to enlarge on that subject, but he accepted Sir Lionel's view that the ports should be either all railway or all trust. Great Britain was, he believed, the only country in the world in which the two systems operated side by side. Both had points in their favour, but when they were run side by side each cancelled out the other's advantages.

He thoroughly agreed with what Sir Lionel Warner and Sir David Owen had said as to the wastefulness of working expensive plant for only eight hours out of the 24. He thought that what the dock labourer really wanted was not to work shorter hours but to work the longer hours and get overtime rates for doing so. In any comparison of English and continental port charges the fact that the shift system operated on the Continent

should be borne in mind. When he had visited the ports of Rotterdam, Antwerp and Hamburg some years ago—and no doubt the practice still continued—he had found that they worked the shift system; the men were told off at three times during the day and they received the same rate of pay for each shift; no difference was made between the hours of 8 to 5 and before 8 and after 5; some allowance for midnight working was the only variation made to them. That made a very great difference to the despatch and turn-round of ships.

He hoped that more would be said about the coastwise trade because it seemed very difficult to get at the real reason for the falling off in this trade. It was stated that the Dutch with their shallow boats, had developed an entirely new trade and given new life to some of the smaller and older ports, such as Exeter and Norwich. He had never been able to find out, however, why it had been necessary to wait for the Dutch to come along and shew the English coastwise owners how to do it, and it would be very interesting to know the reason.

Dr. Brysson Cunningham said that the paper was both interesting and timely, but from the point of view of the dock engineer its effect was not altogether exhilarating; it looked as though dock engineers would shortly be "out of a job." He was inclined to imagine that Sir Lionel must have written the paper in the gloom of a winter afternoon, a gloom which had infused itself into the ink of his pen and made it blacker than usual. Unfortunately, however, the statements in the paper were well supported by irrefutable statistics.

He did not propose to analyse or discuss those statistics, but there was one remark made at the commencement of the paper on which, as an engineer who had been engaged almost all his life in maritime construction works, he would like to offer a qualifying observation. Sir Lionel said that the dock engineer must build for posterity. Brought up as he had been in the traditions of the Mersey Docks and Harbour Board in whose service he was many years ago, he (the speaker) had entertained that view for a long period; one could not look at the works which had been produced at Liverpool, Southampton, London, and elsewhere without feeling that dock engineers had, in fact, been building for posterity, if not for eternity! When, however, he went to America some years ago and saw there the same class of work being performed by slender piers of open framework, costing very much less to construct than the solid, substantial dock and quay walls to be found in this country, a doubt arose in his mind, and he had been wondering whether it was necessary to "build for posterity." It was striking to see a huge Atlantic liner being brought up against a relatively slender, fragile pier at New York. He had watched the procedure from the deck of the "Majestic" on one occasion. The ship was brought up against the pier head, pivoted round on her amidships axis and then she glided smoothly into her berth without any trouble. The piers had been used in that way for many years without any accident or detrimental occurrence. He was alive to the fact that over here the conditions were not quite the same; there was the question of the tides, for instance, with the attendant problem of lock entrances which necessitated solid structures; but there were cases in this country where it would be possible to use piers and quays of lighter construction to do the same work as was being done by the present very substantially constructed piers of masonry and concrete.

It was, moreover, not only the question of constructional cost which was involved. Many years ago, when he was at Liverpool, he had been engaged on the re-modelling of a number of docks at the northern end of the dock estate, for which purpose it was necessary to demolish certain structures which had been built in a preceding generation to "last for eternity," but which, with the effluxion of time, had become obsolete. In order to effect the desired improvements they had to be removed altogether, and the process was extremely difficult, costing a great deal of money. Bearing these facts in mind, he would like to enter a qualifying protest against the author's statement that the dock engineer "must build for posterity."

Sir Lionel then went on to speak about the smaller ports. These had come in for a good deal of abuse and disparagement lately, principally from the authorities in charge of the major ports. The small ports had been accused of being redundant and of poaching on the preserves of their more powerful neighbours. The influx of relative prosperity which had come to a number within recent years was not due, and Sir Lionel did not allege that it was due, to any additional works which they had undertaken; it was attributable rather to the adaptation of the internal combustion engine, and of the diesel engine in particular, to the requirements of coastwise traffic, whereby vessels of shallow draught and much increased capacity were enabled to penetrate far into inland waters with speed and security.

In the paper, reference was made to passenger accommodation at ports. He did not know whether the author had been

* "Economics of port development and administration," Institute Journal, Vol. II, pp. 442-68.

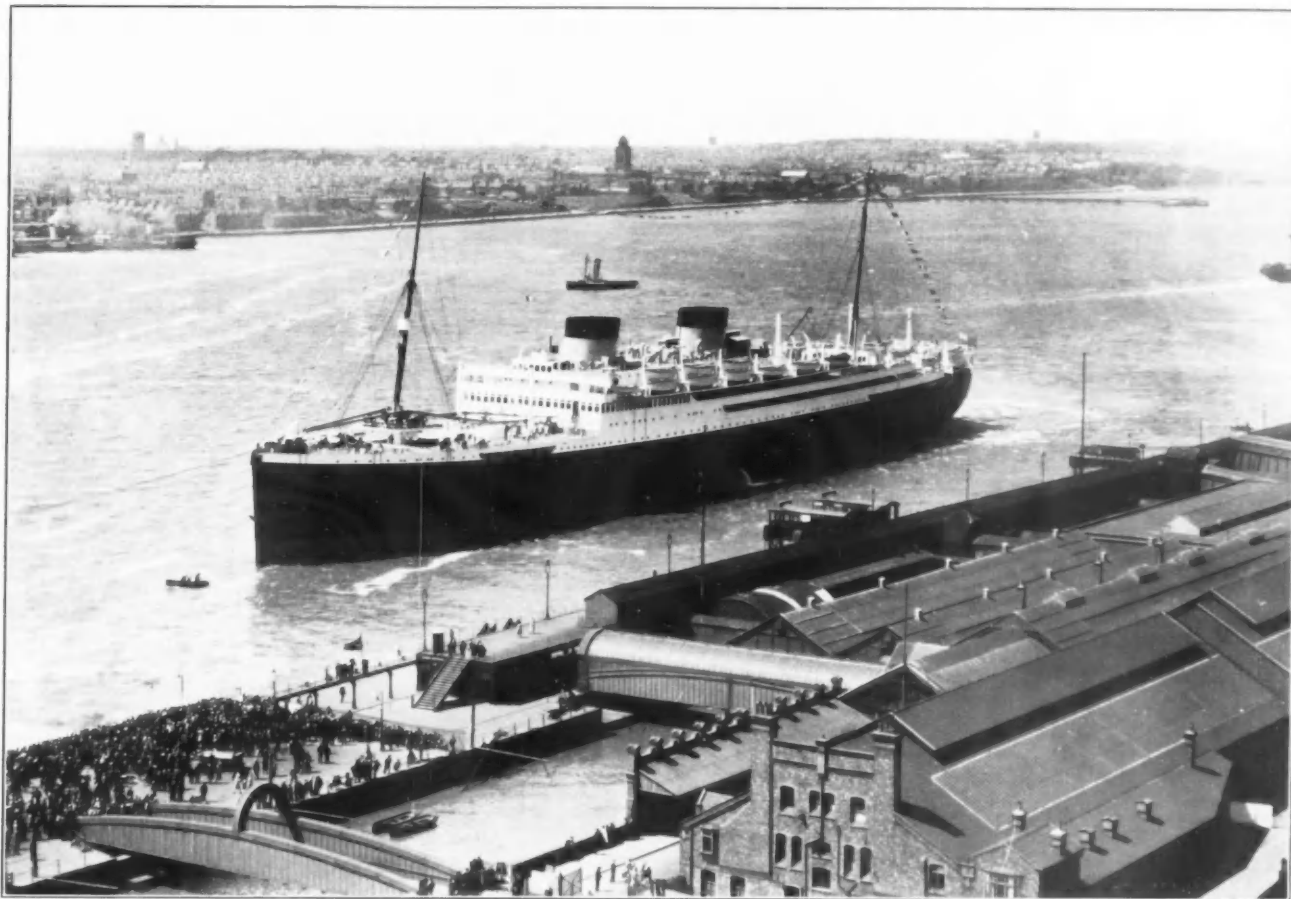
Some Considerations of Problems affecting Port Management—continued

actuated, in making that reference, by a lecture* which the speaker had delivered recently to the Institute, in which it was pointed out that the standard of port accommodation for passengers in Great Britain was much below that of the Continent. Sir Lionel said that the facilities were costly to provide, were not remunerative and seemed liable to abandonment at short notice. On that statement he would make the comment that facilities attracted traffic and if facilities of the right kind were not provided, traffic could not be induced to come. Quite a number of people were discouraged from travelling abroad because in passing through the ports of this country they met with many inconveniences and discomforts.

Sir Cyril Hurcomb assured Sir Lionel Warner that no one would ever regard him as a Jeremiah. He first met Sir Lionel

as being ports at all. One did not think of Exeter and Norwich as being ports, but rather as cathedral cities. That was an interesting development and there he thought that the position of the small port had been helped and not hindered by the growth of road transport. By the new facilities of road transport these places had again become distributing centres, and one wondered whether there might not be a real function for some of the smaller ports by the combined use of motor boats to reach them from the sea, and road, or improved or developed rail facilities to serve them on the internal side.

Efforts had been made some years ago, upon the representations and indeed upon an elaborate survey undertaken by the Chamber of Shipping into their possible uses, to develop the small ports, but those efforts had met with almost no success.



Port of Liverpool. M.V. "Britannic" approaching Princes Landing Stage.

(By Courtesy of the Mersey Docks and Harbour Board)

during the war when they were both trying to prevent other Government departments from abusing the ports and trying to convince the traders that in time of war, at any rate, ships and quay space could not be regarded as convenient free or cheap storage. In the depths of those difficulties there was no one who preserved a more equable mind and a more courageous outlook than Sir Lionel. But he had, of course, to face the facts, and that was one of the valuable points about his paper. There were no words wasted in the paper, but a great many fundamental issues were touched on.

One of the most interesting questions raised was that of the smaller ports. He understood the author's view to be that there was no economic justification for what might be called competitive and spectacular new construction and that, broadly speaking, surveying the growth and the nature of the trade of the country and even looking to the future, the actual dock and quay space available in the aggregate not only met the needs, but left a margin. Comparing 1934 with 1913 the author said—and it was a striking fact to bring out—that "with much less port accommodation in 1913 the same weight of goods was handled without difficulty." Sir Lionel then commented on the decay or the reduced utility of the smaller ports and attributed it in part, as was obvious enough, to the growth in the size of ships. He (the speaker) had intended to raise the point which Dr. Brysson Cunningham had mentioned, namely, that there had been a rather striking revival in some of the smaller ports and particularly in those which lay some way inland and which ordinarily did not occur to one's mind

Another striking fact, to which several speakers had referred, was that the immense capital sunk in British docks was used only for eight hours a day for loading and discharging cargo. That was interesting, because there was an immense use made of the railways throughout the 24 hours, and there was a great and growing use made of the roads throughout the 24 hours. There had been a large increase in the amount of traffic which moved by road at night, much of it, incidentally, passing to and from the ports.

On the question of warehousing, he did not know whether Sir Lionel took the view that the provision of cheap and direct warehousing at the ports would encourage the importer to do his business on a less hand-to-mouth system, i.e., whether if the importer had convenient storage which saved him handling and expense he would perhaps go back to his old practice of dealing with his goods in rather larger bulk.

As citizens, the people of Great Britain did not see enough of their docks or appreciate the function which the docks discharged in the national life. He did not know how many of the nine million people who lived in Greater London and who depended so largely on the Port of London had ever seen the river below the Tower Bridge. Members of the Institute of Transport no doubt did appreciate the position which the ports occupied in the national life, and, as Mr. Ross-Johnson rightly said, anyone who studied the papers presented to the Institute, including that now under discussion, would obtain a very fair and accurate conspectus of all the principal problems, of vital importance to the nation, which arose in connection with the harbours and docks of this country.

Mr. G. S. Szlumper said the problem of the small ports and the grouping of them seemed to be one which recurred but still

* "Maritime passenger stations." *Institute Journal*, Vol. 18, pp. 167-76.

Some Considerations of Problems affecting Port Management—continued

remained to be solved. That was probably because their functions was not definable. Their fortunes had varied for many reasons beyond their control, but he thought that now their position was probably being defined, and the time might come in the near future when it would be opportune to review the whole subject and the question of grouping and the possibility of co-operation between the smaller and the larger ports serving the same area might well be considered.

The shift system was undoubtedly a highly desirable one, no doubt equally from the point of view of the shipowner and the dockowner, each owning expensive machines; but, if the existing arrangements were sufficient for the present intake and output over the quays, an intensive system of working would simply mean that the needs of the country could be supplied in a fewer number of months and, unless some new trade could be found, dock and ship facilities would be idle for months in the year instead of for hours in the day. All the ports had to keep some surplus of accommodation against rushes of traffic and one could never hope to see that used by any appreciable amount of traffic; but the surplus accommodation, like some of the smaller ports, would prove valuable in times of national emergency and must be conserved.

The question of national emergency also had a bearing on that of warehousing at the ports. If one believed but half of what one read as to the possibility of war-like operations in the future, it seemed probable that ports, by reason of their business and of their easy "findability" from the air would be particularly susceptible to air attack; and if, in addition to their existing facilities, they were to provide largely increased warehousing accommodation, that would be an added risk and an added danger. Before rushing too rapidly, therefore, into the provision of additional storage at the ports, the question of protection against air raids must be taken seriously into account.

There was one matter relating to the user of quays which he would mention. When he first went to a certain railway-owned port the "Adriatic" was still running and used to bring in her six or seven hundred passengers and five or six thousand tons of cargo. Today, however, the standard of luxury and speed required at any rate by the Atlantic traveller, and therefore the cost of the machine, was such that the North Atlantic passenger vessels carried no cargo; they came into Southampton and rushed out again as soon as they could, their one desire being to obtain a rapid turn-round. Instead of one vessel bringing both passengers and cargo, the luxury liner, requiring a thousand feet of quay length, brought the passengers, and a separate cargo liner the cargo. Although, therefore, the quantity of goods coming into the country might be no greater than in 1913, it might require a great deal more accommodation to handle it.

With regard to light, open piers, he was in agreement with Dr. Cunningham for a number of reasons, including scouring; but it was difficult to convert engineers to that viewpoint.

The President, referring to the question of the modernisation of ports, and particularly the larger ones, laid stress on the importance of keeping up to date the older system of docks and not always spending money in breaking new ground. It was just as important to modernise the central system of docks to the utmost degree as to create a new deep-water dock capable of taking a vessel 1,500-ft. in length, because a port must always be in a position to attract all kinds of ships for all kinds of trades.

Mr. Ross-Johnson had spoken of the way in which the Dutch had used small ships for trading between the lesser ports of this country, and asked why it had been left to the Dutch to do this. Apart from the usual diffidence of the Britisher to come forward before others had broken the ground, it must not be forgotten that Holland was virtually the first country to use the diesel engine. It was nearly thirty years ago that he went to London Docks to see the "Zeelandia," which was almost the first ship of any size to have a real diesel engine. The British had learned their lesson, and, as was usual when once they woke up, they roused themselves very quickly and sometimes very effectively, but they could not do very much with their hands tied and if the British Government wished to keep the British flag flying, it must see that the British shipowner had fair play.

Linked up with that was the question of the development of the small ports, and he thought it was of very great importance that these small ports should be developed both from a trading point of view and from a national point of view, in the latter case for the distribution of the necessities of life. Unless and until absolute equality and fair play were given to the British shipowner, however, he would not be able to increase the number of small units of the type referred to. That was a very important matter which had been referred to on many occasions both in the press and elsewhere. It was to be hoped that some reasonable action would be taken without undue delay by those in authority to see that the smaller craft

were increased in numbers and that British owners had their hands untied, so as to increase the flow of trade to the smaller ports which were essential to the national life of Great Britain.

Sir Lionel Warner said he had been expecting Sir David Owen to say how he proposed to group the ports, but he had left to keep another engagement without developing his theory, which was unfortunate. Mr. Szlumper used a better phrase in speaking of increased co-operation between the larger ports and the smaller ports, which was quite different from grouping. He imagined that Sir David's idea was that London should take over the control of the small ports in its vicinity, but he did not think that that was what Mr. Szlumper had in mind; Mr. Szlumper's idea, he understood, was that they should work together, and with that every large port would be in agreement. It would assist in clearing the quays more quickly, using both land and sea to carry this into effect.

The question of warehousing had been discussed from two different aspects, one peacetime and the other war-time. He entirely agreed that warehousing for war-time purposes must be away from the ports, but this country was not always in a state of war, and in time of peace warehousing should be made as cheap as possible for the trader.

Dr. Cunningham did not like the statement that the dock engineer must build for posterity, but, as he remarked, every dock engineer in Liverpool had been taught to do that, and surely the results were justified judging by some of the older docks in existence today. In this connection the President would probably agree that the Princes Dock, which was used by his company in Liverpool, was not a bad dock, yet it had been in existence for a very long time and had not been altered materially apart from the provision of some new sheds. He would never advocate wooden piers in the tidal estuary of the Mersey, with a 30-ft. rise and fall of tide, or in the narrow waterways of enclosed docks. The position was quite different in American ports where there were open water and little, if any, range of tide. Sir Lionel regretted that the time at his disposal was too short to enable him to reply fully to all the points raised by the different speakers and particularly those put forward by Sir David Owen, and concluded by thanking the members present for their criticism and patience in listening to him.

On the motion of the President, a vote of thanks was accorded to the author for his paper and the proceedings then terminated.

Transition from Fur Trade to Grain Trade at the Port of Churchill, Manitoba

From fur trade to grain trade has been the history of the Canadian West in the past 55 years. In 1881 the first railway began to stretch its tracks across the broad prairies to ultimately reach the sea at Vancouver, opening up the one-time Hudson Bay Territory to the farming settlements which replaced the scattered trading posts. Fifty years later, in 1931, the transition of the old-time fur trading routes was made complete by establishing Western Canada's new grain shipping route by way of Hudson Bay. For two hundred years Hudson Bay had been the front door, the main entrance, of the fur trading parties who came from England by ship to Churchill, and then by York, boats made their way across the West, establishing posts at widely-separated points, but maintaining direct connection with Hudson Bay as their base of transportation. With the coming of the railways direct connection was provided with Eastern Canada, and the old route fell into disuse.

Now that the railway reaches the shores of Hudson Bay at the new Port of Churchill, the old entrance to Western Canada has been re-opened, and the vision of a short route from the western prairies to Europe has become a reality. A modern harbour and terminal have been constructed at Churchill, and cargoes of wheat are successfully despatched to the markets of Great Britain and Europe. During the past season of navigation, which opened on August 9th and closed on October 6th, fourteen vessels reported inwards and outwards at Churchill with a registered tonnage of 41,190 tons. Inward cargoes amounted to 1,600 long tons. Wheat exports were 4,293,501 bushels valued at \$4,288,898.

The chief claims for the Hudson Bay route are that it shortens the distance to European ports and brings the head of ocean navigation into the east-and-west centre of the Continent. From Churchill to Liverpool is 2,936 miles, whereas from New York to Liverpool is 3,040 miles. From Montreal to Liverpool via Bell's Isle Strait is 2,760 miles. Churchill is in a longitude west of Minneapolis and St. Paul.

Notes of the Month

Gloucester Dock Company.

It was stated at the general meeting of the Sharpness Docks and Gloucester and Birmingham Navigation Company, held on April 14th, at the Dock Office, Gloucester, that the imports for last year, which amounted to 724,957 tons, constituted a record for the port.

Oil Harbour Extensions at Copenhagen.

The general manager of the Port of Copenhagen has now brought the proposed extension to Provestenen, the oil harbour, involving 3,656,000 kr., before the harbour board. The extension includes the construction of a second pier, and the dredging of a basin between it and the first pier; the construction of a breakwater on the north side, and a prolongation of the breakwater on the south side; and further, a bridge on the north-west side of the second pier, and the building of a transformation station and laying of an electric reserve cable.

Institution of Engineers and Shipbuilders in Scotland.

At the annual general meeting of The Institution of Engineers and Shipbuilders in Scotland, held on 6th April, 1937, the following members were elected to the Council for the ensuing three years:—

For Session 1937-38—President: A. C. Gardner, F.R.S.E. (Engineer, Clyde Navigation Trust).

For Sessions 1937-40—Vice-Presidents: S. B. Ralston; E. W. Russell, B.Sc. Councillors: R. M. Brown, D.Sc., Ph.D.; G. R. Grange, D.S.O., M.C., B.Sc.; J. M. McNeill, M.C., B.Sc.; J. B. Mavor; W. Nithsdale, B.Sc. Associate: D. Higgins.

Dock Labour Conditions in France.

The Chamber of Commerce of Dunkirk has called the attention of the Government to the nefarious effects of the 40-hour week on the port traffic. Several thousand tons of cargo have already been diverted.

At Brest the points raised by the dock workers have been arbitrated by a delegate of the Prime Minister. Preference shall be given, for employment, to the men holding a professional card to be delivered by the Municipality. Working hours shall be 8 a.m. to 11.20 and 1 p.m. to 4.20, wages 46 frs. per day, overtime at the rate of 8.50 frs. per hour in daytime, 11 frs. on holidays or at night time, night or holiday shifts to be paid 31 frs.

Port of New York Authority Annual Report.

The Port of New York Authority has emerged from the depression years with its underlying principles unaltered and its finances "in flourishing condition," according to the sixteenth annual report recently submitted to the Governors and Legislatures of New York and New Jersey.

The report reiterates the authority's belief in the future of the port and points to the continuing increase of vehicular traffic using Port Authority facilities. Gross income from all sources increased 9½ per cent. in 1936 and the net increase was 32.35 per cent. over the previous year.

The report recounts the authority's activities in defence of the port's commercial standing in the nation, listing its appearances in behalf of rate schedules and shipping policies before the Interstate Commerce Commission.

The Port Authority's income from all sources totalled \$13,102,567.05, an increase of \$1,128,382.41. The net income of \$1,428,573.79 represented a gain of \$1,082,430.95 over the previous year.

New Grain Silo at Port of Trieste.

On March 1st, after two years building, the Magazini Generali (Trieste Quay and Warehouses Management) took over and opened the new ferro-concrete silo situated in the bonded territory.

The large silo, provided with all up-to-date installations, covers about 4,000 square metres. The round turret-elevator is 56 metres high with a capacity of 20,000 tons and the upper part with a capacity of 10,000 tons.

The building has been erected on Quay VI, of the bonded territory E.F. Duca d'Aosta and is served by two pneumatic appliances moving along the quay which have each a capacity of 125 tons per hour.

These pneumatic appliances can also be used on vessels of 12,000 tons with deep holds and can effect direct loading from vessels to railway trucks. With this up-to-date installation the special facilities of the port for these operations are greatly augmented.

Dock Extensions at Bristol in the near Future.

Addressing members of a trade delegation from Australia which visited Avonmouth Docks recently, Alderman E. M. Dyer, chairman of the Port Authority, said that the shipping companies were starting a regular monthly service from Australia to Bristol. He expressed the hope that it would work up to a fortnightly service, which would lead to increased consumption. Speaking of the developments which had taken place at the docks, he said that probably there would be a further extension in the near future.

Colombo Harbour Improvement Plan.

A five-year plan, the main purpose of which is to modernise thoroughly the oil and coal bunkering facilities of the Port of Colombo, is under consideration by the authorities. To enable Colombo to compete on more favourable terms with Eastern ports, it is proposed to carry out the following improvements at an expenditure estimated at 15 million reils; the completion of the extensions to the graving dock; the construction of a refitting basin for warships of the East Indies Squadron; the construction of a deep-water quay at which vessels can anchor and carry out their oil and coal bunkering by mechanical means; the reconstruction of existing warehouses, and the construction of an oil basin. A scheme for building a deep-water pier so that passengers may come ashore direct instead of by launches is also under consideration.

Dundee Harbour Extension Schemes.

Alternative harbour extension plans, each costing about £500,000, are under consideration by Dundee Harbour Trustees. One scheme is for the reconstruction of the Eastern Wharf, and the other the building of a new wharf to the east of the existing harbour work. In the case of the Eastern Wharf, additional breadth would be necessary to allow the erection of travelling cranes. The new wharf, which would probably be about 1,400-ft. long, would have to be built out into the river beyond the existing foreshore in order to permit deep water berths. Shed accommodation behind the wharf would be 180-ft. in breadth. Either plan would be divided into three sections, in order that the financial burden might be spread over a number of years. Various borings are to be made before the Trustees give their decision.

The Port of Baltimore.

Proposals for deepening and widening the port channels at Baltimore will shortly be submitted to the Board of Engineers for Rivers and Harbours of the War Department, with the support of principal North Atlantic shipping interests.

A detailed survey to substantiate the need for improved port navigation facilities has been completed, and will be used as the basis for the project. Factors of vessel draft, density of ship movement, meteorological influences on channel navigation, and actual shipping experience in the use of the present channels, will be emphasised in the presentation of the case.

The present application will constitute a re-opening of the case originally launched by Baltimore in 1927. About one-half of the \$5,000,000 (£1,000,000 at par) channel and anchorage improvement programme advocated at that time has been approved and completed. It is now hoped to prove the case for the remainder of the programme.

Aerodromes at Seaports.

The building and extension of airports is among the matters receiving consideration in various seaports. At Bordeaux, the Merignac aerodrome in quite up to date and has been giving full satisfaction, but it is about 13 kilometres from the city, and the idea has been gaining ground in local and regional bodies, that it is not too soon to think of the time when it shall be supplemented by additional installations to meet the requirements of the transatlantic air machines of the future in certain quarters. The site of Grattequina, near the river side, has been suggested. At Nice the scheme for a Government air port at the mouth of the river Var has been approved by the competent committee. The cost will be 32,000,000 frs., of which the State will pay 50 per cent. It rests now with the town and the department and the Chamber of Commerce to agree over the sharing of the remaining 50 per cent.

At Havre the Chamber of Commerce has asked that the town be included in the scheme now being studied for a national air mail service.

Port of New Orleans

During the year 1,512 vessels aggregating 22,824,222 gross tons engaged in foreign and coastwise trade arrived at and departed from the Port of New Orleans; 2,603 vessels, aggregating 11,440,328 gross tons arrived and 2,603 vessels of 11,383,894 gross tons departed. Of the 2,603 vessels arriving, 2,022 aggregating 8,816,112 gross tons or 79 per cent. of the total tonnage arriving used the public docks. An analysis of the vessels engaged in foreign and coastwise trade arriving during the year show 684 vessels brought in whole cargoes as follows: 118 oils; 64 sisal; 206 green fruit; 117 sugar; 24 molasses; 44 coffee; 13 sulphur; 36 bauxite; 9 newsprint paper; 6 phosphate; 9 nitrate; 4 grain; 1 mahogany logs; 23 various commodities.

Of the remaining 1,925 vessels, 886 arrived with general cargo, 255 in ballast, 934 with cargo in transit, 374 with fruit and general cargo and 16 towing other vessels.

An analysis of the 2,603 vessels in foreign and coastwise trade reported departing from the Port of New Orleans during the year show 59 departed with whole cargoes as follows: 47 with oil; 1 with cotton; 2 with creosote ties; 5 with sulphur; 1 with lumber; 3 with scrap iron. Of the remaining 2,544 vessels, 1,674 departed with general cargo; 640 in ballast; 213 cargo in transit and 17 departed towing other vessels.

The amount of regular first dockage dues earned from 2,022 vessels aggregating 8,816,112 gross tons which occupied the public docks during the year was \$607,508.88, an average of .069 per gross ton. During the year 2,055 vessels engaged in foreign and coastwise trade aggregating 8,816,112 gross tons or 97 per cent. of the tonnage coming to the public docks used the sheds, a total of 3,531,761 tons of cargo passing over the public docks were subject to tollage charge. This total sub-divided into 1,878,965 tons of outward and 1,652,796 tons of inward cargo.

The banana conveyors unloaded 14,305,238 bunches of bananas and 25,723 bunches of plantains from 580 vessels. During the year the following vessels other than those hereinbefore mentioned arrived 3,321 steamboats, towboats and barges, 50 miscellaneous craft, raft of logs, etc., 1,087 gasoline launches engaged in oyster, fish and vegetable trade, 211,889 bales of cotton were discharged on Charbonnet Wharf from above steamboats and barges plying inland waters.

During the year 445 vessels aggregating 2,865,597 gross tons engaged in foreign and coastwise trade passed through the Port of New Orleans to points above without stopping within the port limits.

The 2,603 foreign and coastwise vessels departing during the year remained in the port an average of 3.67 days.

During the 12 months, the principal commodities moving through the port consisted of:—

	Inbound.	Outbound.	Total.
Animal and Animal Products ...	53,098	50,336	103,434
Chemicals ...	173,071	118,088	291,159
Machinery and Vehicles ...	6,054	56,763	62,817
Non-Metallic Minerals ...	1,048,573	705,950	1,754,523
Ores, Metals and Manufactures of ...	267,698	249,229	516,927
Textiles ...	187,822	476,636	664,458
Vegetable Food Products ...	1,944,034	302,406	2,246,440
Other Vegetable Products ...	171,207	85,618	256,825
Wood and Paper ...	181,026	642,892	826,918
Unclassified and Miscellaneous ...	70,979	81,239	152,218
Total—Short Tons ...	4,106,562	274,9157	6,855,719

Trade at Canadian Ports

Speaking at the annual general meeting of the Shipping Federation of Canada, held at Montreal recently, Mr. W. R. Eakin said that it was gratifying to be able to record that operations during the year 1936 had borne out the optimism expressed at the annual meeting a year ago.

Reviewing the past year from every standpoint, they could look back with a considerable degree of satisfaction at the results achieved. For shipping engaged in Canadian services, the prospects were brighter than they had been for a long time, and justified the hope that the industry had emerged from the heavy strain of the past seven years.

The Port of Montreal had had an unusually long season, the harbour being utilised by ocean-going tonnage for 245 days. The total tonnage of vessels reached a figure of 5,728,293 tons net, compared with 5,111,024 tons during the preceding year. Grain deliveries from the harbour elevators showed a marked increase, total deliveries being 87,116,340 bushels—27 per cent. higher than in 1935. Of this total 68,809,392 bushels were exported overseas. Coal delivered in the harbour amounted to 3,612,682 tons. Of this quantity the main items were 1,984,535 tons of Canadian bituminous varieties and 1,636,127 tons of British anthracite. Oil imports reached a record level, amounting to 2,200,670 tons. Cattle exports were resumed, 31,700 head being shipped overseas during the season of navigation.

Trade at the other principal Canadian ports also showed a considerable improvement, particularly grain shipments. At Sorel total deliveries amounted to 24,232,888 bushels, as compared with 6,793,367 in the previous year, while at St. John, N.B., grain exports were nearly doubled, having a total of 12,311,138 bushels. Exports from Vancouver amounted to 61,451,765 bushels, a heavy increase on the figures for 1935. Lumber shipments from Vancouver were also considerably higher, and the year closed with every indication of a still greater movement of traffic via this Pacific Coast outlet. The general improvement in shipping to Canadian eastern ports was reflected in the tonnage figures of the Federation during the year. Total tonnage entered in the Federation amounted to 2,089,511 tons gross, a material increase over the total of the previous year. Liner tonnage was substantially higher, while transient tonnage also registered a considerable advance.

Considerable progress had been made in the completion of the 35-ft. channel between Montreal and the sea. The principal work in this connection was carried out in the harbour of Montreal, dredging operations being expedited in that section between Montreal Harbour bridge and the foot of the Lachine Canal, so as to deepen the channel approaches to liner berths in the upper harbour. It was anticipated that this section of the channel would be dredged to 35-ft. early next season.

Nineteen per cent. Increase of Goods Traffic via German Ports

A short time ago it was reported that the traffic of seagoing ships in the more important German ports had shown an increase of nearly 9 per cent. during 1936. The results achieved in connection with the transhipment of goods in the more important German ports during 1936 are now also in hand. The statistics show that the amount of cargo handled was 56,914,000 tons, an increase of 8,900,000 tons, or of 19 per cent., as compared with 1935.

An Unusual Cargo

By the courtesy of the Mersey Board Staff's Guild, we are enabled to reproduce from their magazine *Mersey* the following extract which will be of interest to many readers of this Journal.

The Norwegian vessel "Belpamela," a frequent visitor to the Port of Liverpool, recently sailed with a cargo of unusual character. She has picked up many locomotives and tenders on her frequent visits here, but on this occasion she took on board at the west side of the Gladstone Dock, with her own lifting gear, a tug in one piece weighing over 80 tons, two barges weighing another 80 tons, and other craft. The tug and barges have been built by Messrs. Yarrow, of Northwich, for Verawall, in India.



The "Belpamela" loading a remarkable cargo for India.

National Programme of Improvement for Smaller British Ports

The Influence of Modern Ship Design on the Coastal Trade

By Admiral the Rt. Hon. the EARL OF CORK AND ORRERY, G.C.V.O., K.C.B.
(President of the Coastal Trade Development Council)

THE Report on Facilities for Coastal Trade at Ports in England, Wales and Scotland," the first instalment of which follows this introductory notice was prepared for the Coastal Trade Development Council by Messrs. Wilton & Bell, consulting engineers, at the invitation of the Council's first chairman, the late Sir John Sandeman Allen, M.P. Its purpose was to place in the hands of the Council authoritative information concerning the condition of and the coastwise facilities provided at ports other than the chief foreign-trade ports. The suggestions made by the authors regarding the standardisation and improvement of the lesser ports visited will, doubtless, be read with the closest attention by those who are interested in port development, but since the report was compiled for information only, its suggestions must not be taken as carrying the formal endorsement of the Coastal Trade Development Council.

Some of the improvements suggested will, doubtless, meet in principle with the approval of both authorities and ship-owners concerned. Others may have been carried out since this report was drawn up, and the Coastal Trade Development Council would be grateful to harbour authorities for a note of such improvements in order that records may be brought up to date. As, however, the improvements outstanding are dependent upon considerations of finance it is obvious that the question of ways and means would require to be looked into very carefully before their practicability could be affirmed.

An Earlier Report.

Many readers of *The Dock and Harbour Authority* will doubtless be aware of the reports made by the Port Facilities Committee of the Chamber of Shipping of the United Kingdom which preceded by some years Messrs. Wilton and Bell's report. In considering the financial aspects of port improvements it will be well to recall that, although the Development (Loan Guarantees and Grants) Act of 1929 was applicable to port improvement, very little use was made by the port and harbour authorities of the financial facilities afforded by that Act. Doubtless, there was good reason at the time for reluctance to embark on schemes involving substantial expenditure, for the proffered assistance came when there was little likelihood of an early return on the expenditure involved.

The question now is whether circumstances have so changed since 1930 as to (a) give reasonable prospect of a return on capital expenditure, or (b) warrant the expansion of our port resources, irrespective of whether the improvements will yield an immediate return, as a matter of transport efficiency and national safety.

All who read the report by Messrs. Wilton & Bell must be impressed by the thoroughness with which they performed their task and the Coastal Trade Development Council acknowledges, with grateful thanks, the usefulness of the information which has been placed at its disposal by the authors.

The improvement of the lesser ports of the United Kingdom is only one facet, albeit a highly important one, of the problem of coastal trade development. It may not, therefore, be out of place to refer to some of the wider aspects of the question in order to view in perspective the scope for the extension of this ancient and important industry and of the opportunities which await the progressive port.

Volume of Coastal Shipping.

In the first place, it is worth remembering that, of the total volume of shipping that entered and left the ports of the United Kingdom with cargo during 1936, a little less than one-third was employed in coastwise voyages

That is a very striking proportion which is probably totally unrealised by the majority of the public.

Even so, it is a smaller proportion than that which prevailed in the days when we were more dependent upon the sea routes for the transshipment of deep sea cargoes and for the movement of goods from point to point around our coast.

Are we likely, in the face of competition by road, rail and air, ever to get back to a greater dependency on the sea routes? Is there a probability of more goods going by sea? Is the demand for coastal facilities at the ports likely to be greater or less in future than in the past?

The only answer to all these questions is that no island nation possessing a long seaboard and an abundance of harbours can afford to ignore the inherent economies of sea carriage, and that the future of coastwise shipping, as part of our national transport system, is thereby assured for all time. In recent decades coastwise shipping has experienced a temporary slump, but improvement, has set in within the last four or five years and seems likely to continue so long as the coastal ship-owners and the port authorities keep themselves abreast of the times.

Transport Re-distribution.

One reason for this opinion is that the ever-growing congestion of both goods and passenger traffic on the main roads must ultimately result in some restriction of heavy goods traffic using the roads and that, in the consequent re-arrangement of traffic, coastal shipping will be called upon to provide much of the relief.

Secondly, external conditions may compel us to view with apprehension the concentration of industry and population in London and the South and around the four or five main ports of the country.

For safety's sake some dispersal of industry and transport may become imperatively necessary, and in this re-distribution it is highly probable that coastal shipping will be called upon to carry a much larger proportion of our trade than

at present, while many secondary roads and branch railways linking the hinterland with the seaboard will have to be used to a much greater extent.

Thirdly, the development of the internal combustion engine has brought about a striking change in the design and capacity of small craft, which is effecting important economies in sea transport while extending the scope of coastal shipping.

To-day we see ships capable of carrying up to 750 tons of cargo or more safely negotiating the shallow waters of our estuaries and penetrating far inland by tidal river. The internal combustion engine has made practicable the building of ships of larger cargo-carrying capacity in relation to draught. The result has been the rapid development of the trade of some of the smaller ports, although it has incidentally attracted to our shores many foreign coasters seeking to participate in that trade.

Influence of the Motor Coaster.

The motor coaster is unquestionably going to play a supremely important part in the development of the smaller ports. Without implying any discouragement of the steamship and the coal industry, it may be said that the problem of the development of the smaller ports must be considered in close relationship to this new factor in shipping design—the development of the internal combustion engine.

Perusal of the report to which this article refers will, in fact, show that the consulting engineers have hinted at the possibility of the recognition of two distinct standards of port improvement, both of which are governed by the coming of the motor-ship.



Admiral the Rt. Hon. the Earl of CORK and ORRERY
G.C.V.O., K.C.B.

National Programme of Improvement for Smaller British Ports—continued

If the question of the revival of the smaller ports is to be seriously considered, it must be viewed as a national problem to be undertaken on the initiative and with the assistance of the Government. It must, moreover, be a standardised scheme aiming, as the able collaborators suggest in their report, at the creation, along the whole length of the seaboard, of a chain of ports capable of accommodating vessels of two or three standards of draught, together with the necessary oil depots. This would be of enormous value to the nation in peace and war.

Standardisation of ports implies to a greater or lesser degree standardisation of ships and of shipbuilding and this in turn means the cheapening of costs.

Need for British Ships.

If it be argued that the creation of more shallow draught ports implies the creation of facilities to tempt to our shores still more foreign ships—ships which will not be available to us in times of emergency—the reply is that any national scheme for the development of the lesser ports ought to be accompanied by a definite plan for the encouragement of the British-owned motor coaster.

Recently, Dr. Leslie Burgin, Parliamentary Secretary to the Board of Trade, in rebuking those who advocate coastal reservation as a means of encouraging British coastal shipping, attributed the success of the foreigner on the British coast to his greater enterprise in evolving a class of vessel adapted to the special requirements of the shallow draught trade.

The Parliamentary Secretary, however, in paying this tribute to Dutch efficiency did not tell the whole story, because he ignored, firstly, the economies in building and operating costs which give the foreigner an unquestionable advantage over the British shipowner, and, secondly, the fact that where British ships have been able to build up a regular two-way trade (as in the case of Norwich and elsewhere) and are thus able to reduce the handicap of competing against "triangular" voyages, they can and do hold their own.

If there is to be a general scheme of port improvement for the purpose of catering for the trade which has been made possible by the advent of the motor coaster, it would seem that parallel measures will have to be taken to enable British shipyards to build ships and British owners to finance their purchase and to operate them on equal terms with foreign competitors. This suggestion does not affect the question of coastal reservation.

Plea for Equal Conditions.

Without parity of conditions, both as to capital costs (which, because of interest charges, must affect overheads) and as to running costs, it is not entirely just to blame British owners for loss of coastal trade to the foreigner.

Unless we build more and more British ships as we improve the port facilities we shall find, in time of national emergency, that our money has been largely wasted, because we shall not have sufficient ships when foreign vessels are no longer available to permit us to make the fullest use of the planning and modernisation of our port facilities.

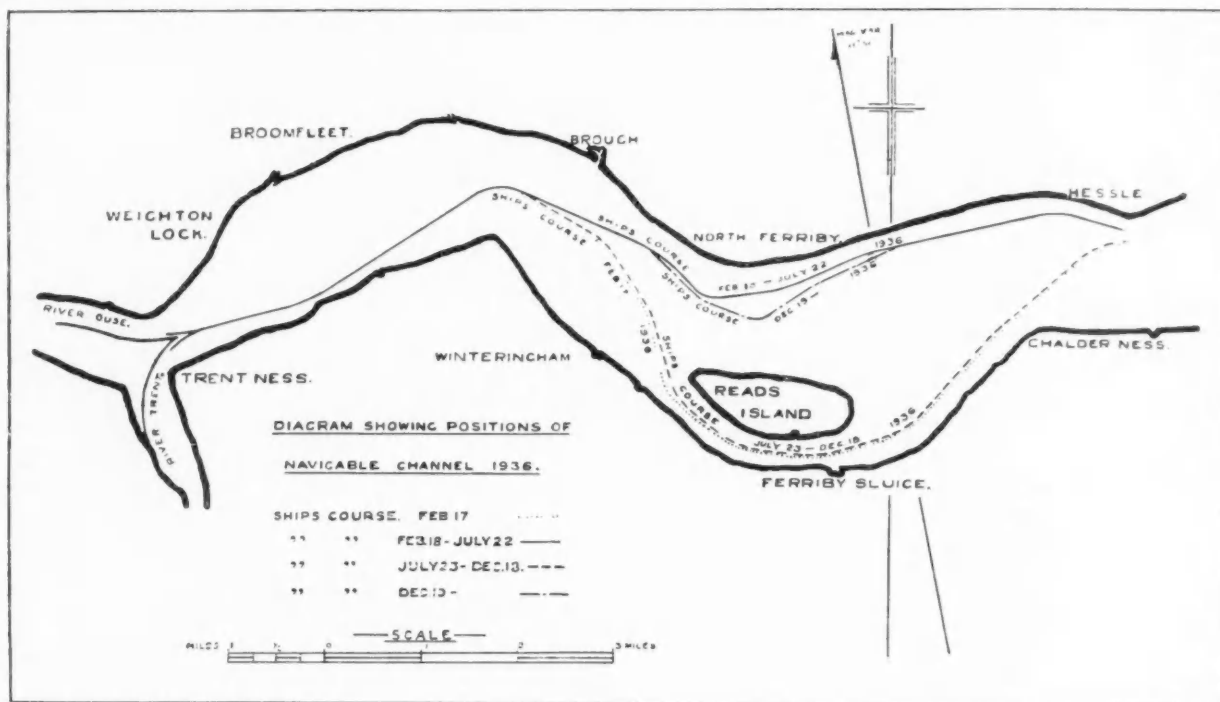
Humber Conservancy Board

Variations of Channel in River Estuary

From the Engineers' Report to the Humber Conservancy Board, dated 8th February last, it is of interest to note the

The one-fathom channel is virtually continuous, but off Oyster Ness it is extremely narrow. This is the first time since the Spring of 1909 that this channel has been continuous, and only the second time since 1861.

The average width of this contour is 930-ft., which is greater than last year, and is comparable with the minimum average of 665-ft. in the Autumn of 1909, the maximum average of 1,133-ft. in 1916, and the mean average of 851-ft.



rather striking changes in the location of the navigable channel during recent dates. At the date of the Annual Survey:—

From the apex of the Trent Falls Improvement Works to Walker Dyke, thence to the middle of the river opposite Whitton Ness, where the channel ran across to Oyster Ness, from which point it continued along the Yorkshire shore to Hessel.

In 1935 the channel from Whitton Ness to Winteringham Haven occupied the centre of the river, after which it ran between Read's Island and the Lincolnshire shore, crossing over to Hessel from Chaldey Ness.

In February, 1936, it was altered to the Yorkshire side, as indicated above.*

The curves of this channel are very easy for navigation, except off Oyster Ness, where the course is rather abrupt and subject to rapid changes.

The governing depth is 6-ft., which has never been exceeded, and only once (1909) been equalled. It is double the average, which is 3-ft.

The channel South of Read's Island still exists as a one-fathom contour as far as the Western end of Read's Island, beyond which the depth is reduced to 3-ft. and under. Its average width is 863-ft.

*Since February, 1936, the channel has moved twice, being altered to the Lincolnshire side in August, and back again to the Yorkshire side in December.

Facilities for Coastal Trade at Ports in England, Wales and Scotland

First Section of the Report by Messrs. WILTON & BELL, MM.Inst.C.E.

To the Coastal Trade Development Council

WE have now completed a personal inspection of all the ports of England and Wales which carry on Coastal Trade of any importance, with the exception of the wharves and docks of the great Port of London, and we have also inspected those Scottish ports, which have coastal trade of importance.*

General.

(1) Amongst the ports inspected in England and Wales, numbering in all 134, there have been many which have hardly any trade, and which only have facilities for very small craft, but in making our inspection we thought it advisable to satisfy ourselves as to the possibilities of even these minor places.

(2) To guide us in a general report we prepared memoranda with data dealing with each of the places visited, of which we give the following complete lists. List "A" contains the English and Welsh ports in alphabetical order and list "B" the Scottish ports in alphabetical order. List "C" and List "D" are corresponding lists, starting in "C" from Berwick-on-Tweed and proceeding in due order along the coast to Silloth in Cumberland, and in "D" from Annan on the South-West Coast of Scotland and proceeding in due order along the coast to Leith.

We have omitted from these lists—"A" and "C"—Blakeney, Woodbridge and Highbridge (Essex), which appear in the Admiralty North Sea Pilot, but which, on inspection we found to have fallen out of use and which do not present any prospects of revival. Supplementary to Lists "B" and "D" we have appended some notes on Carlisle, Cromarty, Portmahomac and Granton, which were not visited by us:—

LIST "A."

Aberaeron	Manchester
Aberystwyth	Margate
Aberdovey	Maryport
Anlwich	Middleborough
Barnmouth	Milford
Barnstaple	Mostyn
Barrow	Neath
Barry	Newcastle-on-Tyne
Berwick-on-Tweed	Newhaven
Bideford	Newlyn
Blyth	Newport
Boston	Newquay
Bridgewater	North Sunderland
Bridlington	Orford
Bristol	Padstow
Briton Ferry	Par
Brixham	Penarth
Burry Port	Penzance
Carmarthen	Plymouth
Carmarvon	Poole
Cardiff	Portsmouth
Cardigan	Portsmouth
Chepstow	Preston
Chichester	Swansea
Connah's Quay	Ramsgate
Conway	Rhyl
Cowes	Richborough
Dartmouth	Rochester
Deganwy	Rye
Dover	St. Ives
Ellesmere Port	Sandwich
Exeter	Saundersfoot
Exmouth	Scarborough
Falmouth	Seaham
Felixstowe	Selby
Fishguard New Harbour	Sharpness
Fishguard Old Harbour	Shereham
Fleetwood	Silloth
Folkestone	Snape Bridge
Fowey	Southampton
Fremington	Southwold
Garston	Stockton-on-Tees
Glasson Dock	Sunderland
Gloucester	Swansea
Goole	Teignmouth
Grimsby	Tenby
Hartlepool	Torquay
Haverfordwest	Truro
Harwich	Warkworth
Hayle	Warrington
Heybridge	Watchet
Heysham	Weaver Navigation
Holyhead	Wells-on-Sea
Hull	Weston Point
Ilfracombe	Weymouth
Immingham	Whitby
Ipswich	Whitehaven
Keadby	Whitstable
King's Lynn	Widnes
Kingswear	Wishoech
Lancaster	Workington
Littlehampton	Yarmouth
Liverpool	York
Llanelli	
Lowestoft	
Lydsey	
Maldon	

LIST "B."

Aberdeen	Irvine
Alloa	Kirkcaldy
Annan	Kirkcubright
Ardrrossan	Kyle of Lochalsh
Ayr	Leith
Burntisland	Mallaig
Dumfries	Methil
Dundee	Montrose
Fort William	Peterhead
Fraserburgh	Perth
Glasgow	Port Glasgow
Grangemouth	Stornoway
Greenock	Stranraer
Inverness	Troon



View of Strand Quay, Rye.

LIST "C."

Berwick	Hayle
North Sunderland	Newquay
Workworth	Padstow
Blyth	Ridolford
Newcastle-on-Tyne	Fremington
Sunderland	Barnstaple
Seaham	Ilfracombe
Hartlepool	Watchet
Middleborough	Bridgewater
Stockton-on-Tees	Bristol
Whitby	Chepstow
Scarborough	Lydsey
Bridlington	Sharpness
Hull	Gloucester
Goole	Newport
Selby	Cardiff
York	Penarth
Keadby	Barry
Immingham	Portsmouth
Grimsby	Port Talbot
Boston	Neath
Wishoech	Briton Ferry
King's Lynn	Swansea
Wells-on-Sea	Burry Port
Yarmouth	Llanelli
Lowestoft	Carmarthen
Southwold	Tenby
Orford	Saundersfoot
Snape Bridge	Milford
Ipswich	Haverfordwest
Felixstowe	Fishguard New Harbour
Harwich	Fishguard Old Harbour
Heybridge	Cardigan
Maldon	Aberaeron
Rehester	Aberystwyth
Whitstable	Aberdovey
Margate	Barnmouth
Ramsgate	Portmahomac
Sandwich	Pwllheli
Richborough	Carmarvon
Dover	Port Dinorwic
Folkestone	Holyhead
Rye	Anlwich
Newhaven	Port Penrhyn
Shoreham	Conway
Littlehampton	Deganwy
Chichester	Rhyl
Portsmouth	Connah's Quay
Cowes	Liverpool
Southampton	Garston
Poole	Widnes
Weymouth	Warrington
Exmouth	Manchester
Exeter	Ellesmere Port
Teignmouth	Weston Point and Weaver
Torquay	Navigation
Brixham	Preston
Dartmouth	Fleetwood
Kingswear	Lancaster
Plymouth	Glasson Dock
Fowey	Heysham
Par	Barrow
Falmouth	Whitehaven
Truro	Workington
Penzance	Maryport
Newlyn	Silloth
St. Ives	

*These inspections were carried out on various dates between February, 1933, and December, 1933.

Facilities for Coastal Trade at British Ports—continued

LIST "D."

Annan	Stornoway
Dumfries	Inverness
Kirkcudbright	Fraserburgh
Stranraer	Peterhead
Ayr	Aberdeen
Troon	Montrose
Irvine	Dundee
Ardrrossan	Perth
Greenock	Methil
Port Glasgow	Kirkcaldy
Glasgow	Burntisland
Fort William	Alloa
Mallaig	Grangemouth
Kyle of Lochalsh	Leith

We have dealt with the Ports of England and Wales in one part of the report and with those of Scotland in another, though following broadly on the same lines when dealing with each list.

For convenience we have appended two small "Key Plans" of:—

- (I) England and Wales,
- (II) Scotland (appearing in the next issue).

with the places visited marked in block lettering. Where the port has a coasting berth or berths which can take a coaster of 14-ft. draught at any state of the tide it is underlined heavily. Where it can take a 14-ft. draught coaster at some period of either an ordinary spring or neap tide it is lightly underlined and where it can take a 14-ft. draught coaster at springs and a 10-ft. draught coaster at neaps, the underlining is dotted.



Pwllheli. The Rivals—from Gimblet Rock.

Depths at Coasting Ports.

(3) There can, of course, be no doubt that for coastal trade a port should, if possible, have such depths that coasters of considerable draught should be able not only to enter the port at any state of the tide, but to proceed to and from their berths at any state of the tide.

The number of ports, which can meet this demand without artificial deepening is, however, very limited. Consideration of the volume of trade which might be available and the cost of artificial deepening makes it clear that in the general run of the smaller coasting ports the most that can be reasonably envisaged is the possibility of coasters being able to enter or leave their berths at some period on any day even if the tide is a neap tide.

This does not preclude a consideration of such improvements at the more important ports dealing with coastwise trade as would bring these ports to a state more nearly approaching the ideal, i.e., freedom of movement to and from berths at practically any state of any tide.

(4) With regard to the possibilities of improving access to many of the less important coasting ports by artificial deepening, having had very extensive experience of dredging, we can say that if such artificial depths can only be maintained by regular dredging, the cost would generally be out of all proportion to the advantage gained. There may be instances where the result of deepening when once carried out would be reasonably lasting. We have, in the past, had examples of this, and any particular case has to be considered on its merits. We only wish to emphasise the fact that regular dredging of the entrance or approaches is a heavy burden even on a big port and that it would be a still heavier handicap to a small port. Removal of silt from tidal berths by dredging is another matter and must in the general course of events be carried out at intervals at many small ports.

(5) Proceeding on this basis we may consider the problem of entrance to the various coasting ports on any tide and access to the berths at the various ports for coasting vessels of varying draughts.

As a general upper limit for all coasting ports we have taken a draught of 14-ft., as on this draught a recent design of motor coaster can carry 1,400 tons. An older steam coaster on such a draught would not carry anything like this weight

of cargo, but an old type of steam coaster, well under this draught would take 600 tons of cargo. Moreover, the appearance in the coasting trade of foreign motor-driven vessels of light draught but large cargo capacity, renders it probable that British coasters will tend towards a limited draught.

It seems therefore that if the general run of coastal ports can be brought to a 14-ft. draught standard at M.H.W.O.N.T. they will be of sufficient depth to meet the demands of a greatly expanded coastal trade.

Depths and Accommodation at English and Welsh Ports.

(6) Of the ports in List "A" numbering 134, the following which we place in List "E" for convenience of reference are not up to this 14-ft. standard:

LIST "E."

North Sunderland	Fremington
(Northumberland)	Barnstaple
Whitby	Bridgewater (including High
Bridlington	bridge and Dunball Wharf)
Selby	Lydney
York	Chepstow
Keadby	Portsmouth
Wisbech	Neath
Wells-on-Sea	Burry Port
Southwold	Carmarthen
Orford	Tenby
Snapes Bridge	Saundersfoot
Beybridge	Haverfordwest
Maldon	Fishguard Old Harbour
Whitstable	Cardigan
Margate	Aberaeron
Sandwich	Aberystwyth
Folkestone	Barmouth
Rye	Portmadoc
Littlehampton	Pwllheli
Chichester	Caernarvon
Exeter	Port Dinorwic
Exmouth	Port Penrhyn
Brixham	Anlweh
Dartmouth	Conway
Par	Rhyl
Truro	Mostyn
St. Ives	Connah's Quay
Nayle	Widnes
Newquay	Weaver Navigation
Padstow	Warrington
Ilfracombe	Lancaster
Bideford	

(7) To attempt to bring these ports all up to a 14-ft. draught standard for all tides would involve a heavy outlay. In some instances that outlay would be such as could only be contemplated by a large port with a valuable contingent trade and so would be quite beyond reasonable consideration for a small port.

If, however, some of the ports in List "E" could be improved at small expense to bring them to the standard of 14-ft. draught on all tides then the coast line would have 14-ft. standard ports at comparatively short distances apart which would serve local demands, so far as the heavier draughted coasters were concerned.

Local conditions and the proximity of other coastal ports would naturally be factors of great importance in coming to any final decision as to whether a port should be brought up to the standard of taking 14-ft. draught vessels on all tides.

(8) We have referred to the 14-ft. draught standard for spring tides and neap tides, but the application of a 14-ft. standard for spring tides and a lesser draught standard for neap tides might also receive consideration. Such a standard would bring in a great number of the small coasting ports as available at all tides for light draught coasters whilst available at spring tides for heavier draught vessels.

As there are motor coasters of only 10-ft. draught taking about 600 tons of cargo, it appears that a standard of 10-ft. draught at all tides might be taken for the smaller coasting ports. All the small ports in List "E" could not reasonably be brought to this standard of 10-ft. draught on all tides, but those that could would then, with hardly any exceptions, be able to take a 14-ft. draught coaster on spring tides.

English and Welsh Ports not up to a 10-ft. Draught on Neap Tides.

(9) Of the ports in List "E," the following (List "F") are not up to this 10-ft. neap draught standard:—

LIST "F."

North Sunderland	Fremington
(Northumberland)	Barnstaple
Bridlington	Bridgewater (including High
Selby	bridge and Dunball Wharf)
York	Portsmouth
Wells-on-Sea	Carmarthen
Southwold	Tenby
Orford	Saundersfoot
Snapes Bridge	Haverfordwest
Weybridge (Essex)	Fishguard Old Harbour
Maldon	Cardigan
Whitstable	Aberaeron
Margate	Aberystwyth
Sandwich	Barmouth
Rye	Portmadoc
Chichester	Pwllheli
Exeter	Port Penrhyn
Par	Conway
Truro	Rhyl
Hayle	Connah's Quay
Newquay	Warrington
Bideford	Lancaster

(10) Dealing first with these seriatim we have the following observations to make based on the several memoranda made by us at the time of our visit:—

Facilities for Coastal Trade at British Ports—continued

(a) NORTH SUNDERLAND.—Reconstruction of the damaged South Breakwater of this tidal harbour was being carried out when we visited this port, together with an extension which was intended to give a wider entrance of about 190-ft. with greater protection instead of the former 135-ft. The berths at the Inner Harbour, which are tidal, had become silted, but by removal of this silt this port could be brought up to the standard of 10-ft. draught on neap tides and 14-ft. on spring tides.

(f) SOUTHWOLD.—The entrance piers to this tidal harbour have fallen into a very bad state and there are extensive deposits of shingle inside the harbour. The possibility by reconstruction of the piers and use of the river scour to bring this port up to the 10-ft. neap tide and 14-ft. spring tide standard might be worth detailed investigation.

(g) ORFORD.—From local information it appears that though the small tidal wharf here which is very little used is far below the standard of 14-ft. at springs there are depths of 15-ft. to 16-ft. at H.W.S.T. only a few feet further out, so that a wharf with this depth could be constructed at a very moderate cost. As the wharf is used by the Royal Air Force for taking stores to the Royal Air Force base and there are possibilities of local trade this deserves consideration. The main difficulty, however, is that access to the great inland sheet of water on which Orford stands is restricted by the depths at Shingle Street at the mouth of the Estuary. In order to give access to 14-ft. draught boats at spring tides improvement of this entrance would be vital.

(h) SNAPE BRIDGE.—This is a good private tidal wharf high up the above Estuary which is stated to take 8-ft. at H.W.S.T. and therefore any idea of bringing it to the above standard may be ruled out.

(i) HEYBRIDGE.—Here the ruling depths at the entrance to the basin leading to the Chelmer Canal are only 10-ft. to 11-ft. at springs and 8-ft. to 8-ft. 6-in. at neaps and its improvement to the 14-ft. spring and 10-ft. neap standard need hardly be entertained.

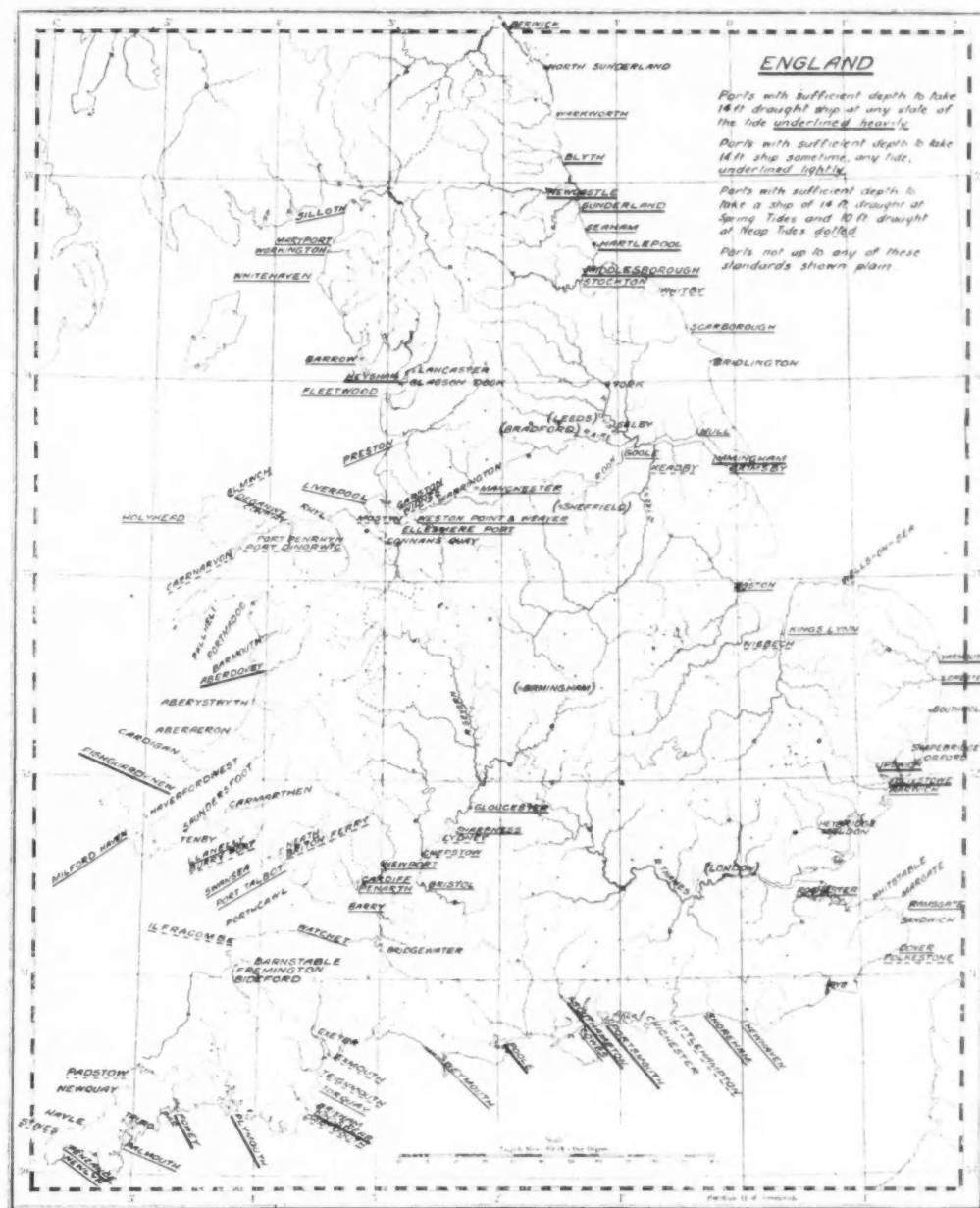
(k) MALDON.—As the depths at the tidal quays at H.W.S.T. are only about 10-ft. and 5-ft. at neaps, and the depth in the channel leading to it would be about 11-ft. at H.W.S.T. improvement to the 14-ft. spring and 10-ft. neap standard may be regarded as unlikely.

(l) WHITSTABLE.—This tidal harbour is hampered by deposits of silt but could be brought up to the 14-ft. spring and 10-ft. neap standard by sluicing and dredging.

(m) MARGATE.—This tidal harbour has one berth near the pierhead which will take 11-ft. 6-in. draught at H.W.S.T. and 9-ft. 6-in. draught at neaps. The existing depths have to be maintained by dredging the deposits of mud. Whether the cost of an increase to the 14-ft. spring and 10-ft. neap standard would be justified is doubtful.

(n) SANDWICH.—This harbour on the River Stour is restricted to 11-ft. 6-in. draught vessels on spring tides and 8-ft. 6-in. draught vessels on neap tides, it is approached by a tortuous tidal river and its improvement to the 14-ft. spring and 10-ft. neap standard would involve extensive work and would not be justified. Richborough Quay, which is a tidal berth about one-and-a-half miles below Sandwich, on the River Stour, can take vessels of 15-ft. draught at H.W.O.S.T. and 12-ft. at H.W.O.N.T. It was used extensively during the late war and has very extensive quays, up to the 14-ft. springs and 10-ft. neap standard. It is now privately owned.

(o) RYE HARBOUR.—When we inspected this tidal harbour in 1933 we were informed that it was only capable of taking 11-ft. draught vessels on springs and 6½-ft. on neaps, though the depths are given in the Channel Pilot for 1930 as 15-ft. at H.W.S.T. The latter would bring it to the 14-ft. spring and 10-ft. neap standard. There is a large drainage area falling into this outlet on which sluices are tripped to give scour near to L.W. It should be possible to bring this



(b) BRIDLINGTON.—The removal of silt deposit by dredging would bring a short length of berthage in this tidal port up to the above standard.

(c) SELBY.—At this port on the River Ouse the Navigation Authorities consider that under normal conditions vessels of not more than 12-ft. 6-in. draught can trade on spring tides and of 8-ft. 6-in. draught on neap tides, whilst above the toll bridge the draughts would be 6-in. less. Besides other wharves, there are a Beet Sugar Factory Wharf below the toll bridge and the wharves of Olympia, Limited, above the toll bridge. A good deal of sugar beet comes by water to the former and there is also a considerable coastwise trade to the latter which is a big factory dealing with oils and feeding stuffs. The narrow width of opening of the toll bridge (about 38-ft. 6-in.) and its proximity to a sharp bend in the river restricts the size of vessels which can get above it.

(d) YORK.—Naburn Locks on the River Ouse limit the approach to the wharves at York, as well as the depths of the river itself, so that this place may be definitely ruled out except for boats not exceeding 20-ft. beam and from 8-ft. 6-in. to 9-ft. 6-in. draught, the latter depending on the tide and the state of the river.

(e) WELLS-ON-SEA.—The approach to the berths which are tidal is along several miles of shoal channel, and considerable work would be required to bring this port up to the 10-ft. neap tide and 14-ft. spring tide standard.

Facilities for Coastal Trade at British Ports—continued

port up to the 14-ft. spring and 10-ft. neap standard and maintain it at not less than this.

(p) **CHICHESTER**.—Vessels of greater draught can enter Chichester Harbour, but access to Dell Quay which is tidal is limited to vessels of 10-ft. 6-in. to 11-ft. 6-in. draught at H.W.S.T. and about 8-ft. at neaps. The harbour is leased to a private firm, who could, if necessary, get vessels of greater draught to the quay by carrying out local deepening or reconstruction of the quay on a new line.

(q) **EXETER**.—As the approach to Exeter is by a canal with locks restricting draughts to 11-ft. 6-in., deepening may be ruled out more especially as Exmouth Dock at the mouth of the river leading to this canal can take vessels of nearly 16-ft. draught at springs corresponding to 13-ft. 6-in. at neaps.

(r) **PAR**.—This harbour, which is privately owned, has a depth at the entrance of 14-ft. at H.W.O.S.T. corresponding to 10-ft. 6-in. at H.W.O.N.T. The depths at the tidal quays were given at 6-in. less. It would be possible by a small amount of dredging combined with sluicing to bring this harbour to the 14-ft. spring and 10-ft. neap tide standard.

(s) **TRURO**.—The River Fal limits the draughts which can get up to Truro to 10-ft. 6-in. at springs and 5-ft. 6-in. at neaps. Falmouth at the river mouth is a deep water port and any question of bringing the tidal berths at Truro to a 14-ft. spring 10-ft. neap standard need not be considered.



A Motor Coaster of 14-ft. draught carrying 1,400 tons of Cargo.

(t) **HAYLE**.—This harbour also is privately owned. The entrance to the harbour is well above the 14-ft. spring and 10-ft. neap standard and a number of quays which are tidal are only just below this and could easily be brought to this standard.

(u) **NEWQUAY**.—This harbour is considered by the Town Council which owns it to be unsuitable for shipping. There is stated to be a dangerous run of sea into it, rail access has now been cut off, and no cargoes had been landed for some time. The Council maintain it now purely for pleasure purposes and do not favour any development for cargo trade. Par Harbour with direct rail connection serves this small town.

(v) **BIDEFORD**.—There are tidal berths at this port which will take a 14-ft. draught boat at springs, but would be hardly equal to taking a 10-ft. draught boat at neaps. It would be possible to bring the present public quay to this standard, by deepening, but the site is not a convenient one and the construction of a new quay in a more suitable position would be preferable.

(w) **FREMINGTON**.—This tidal quay is owned by the Southern Railway Company dealing with considerable quantities of imported coal. Reconstruction of the present quay or the building of a new quay on a fresh alignment would be required to bring it to a 14-ft. spring at 10-ft. neap standard.

(x) **BARNSTAPLE**.—It is only on spring tides that 10-ft. draught boats can reach this port which is tidal. The question of bringing it to a 14-ft. spring 10-ft. neap standard may be dismissed.

(y) **BRIDGEWATER** (including Highbridge and Dunball Wharf).—At this port vessels of 15-ft. draught can enter the wet dock on three or four days in a tidal period, at neaps there is stated to be only about 2-ft. of water in the river leading to the dock. The cost of improving the tortuous river to anything like a 10-ft. neap draught standard would be heavy. At Highbridge tidal wharf near the river mouth, owned by the London Midland and Scottish Railway and

Southern Railway jointly there is a depth of 16-ft. 6-in. at H.W.O.S.T. and about 7-ft. 7-in. at H.W.O.N.T. Dunball Wharf, also tidal and further up the river than Highbridge, although it gives deeper water than Bridgewater, has 17-ft. at H.W.O.S.T., but only 7-ft. at H.W.O.N.T. Highbridge Wharf could be deepened by the removal of silt and probably a further 2-ft. of depth could be obtained. There is a site in Combwich Reach which is stated to offer a depth of 10-ft. to 12-ft. on all neaps and 20-ft. on a big spring, which though quite undeveloped is no further from the town in a direct line than Dunball Wharf. It would require considerable expenditure on road making to give connection to a good main road.

(z) **PORTHCAWL**.—This harbour has fallen into disuse, the town is only a small town, mainly a pleasure resort and it is not necessary to consider any plans of improvement.

(aa) **CARMARTHEN**.—This port can only take 10-ft. draught on springs and as there is a lengthy river approach to it, deepening to a 14-ft. spring and 10-ft. neap standard is not a feasible proposition.

(bb) **TENBY**.—This tidal harbour is up to the 14-ft. spring and 10-ft. neap standard except if an unfavourable wind coincides with a neap. The removal of sand, which is, at times, deposited alongside the tidal quay would remedy this.

(cc) **SAUNDERSFOOT**. This tidal port had become disused, it is close to Tenby and at one time exported anthracite.

Formerly vessels of 16-ft. draught could enter at H.W.O.S.T. and 9-ft. at neaps. It is stated to be privately owned. It could probably be brought again into use if the local collieries resumed the shipment of coal and could be deepened to take 10-ft. at neaps without very great cost.

(dd) **HAVERFORDWEST**.—This is situated on the River Cleddau and as the tidal berths are stated only to take a maximum of 11-ft. at springs and 7-ft. at neaps, the cost of any deepening to a 14-ft. spring and 10-ft. neap standard would rule out such a project.

(ee) **FISHGUARD OLD HARBOUR**.—This can only take boats of 10-ft. 6-in. at springs and 4-ft. 6-in. to 8-ft. at neaps. The Great Western Rail-

way harbour is at the Goodwick side of the bay within a short distance, so any question of deepening this Old Harbour to take a 14-ft. spring and 10-ft. neap standard at its tidal berths may probably be ruled out.

(ff) **CARDIGAN**.—Apart from depths in the river and at the tidal quays, the depths at the bar are not sufficient to admit a 10-ft. draught vessel at neaps. There are big deposits of sand and shingle at the river mouth. Unless dredging and training works here could be combined with the disposal of the shingle for trade purposes, improvement does not appear to be financially feasible. Whether the 14-ft. spring and 10-ft. neap standard could be reached would require detailed investigation.

(gg) **ABERAREON**.—This is a privately-owned harbour; when inspected part of the protective works were badly damaged. Even if it were well protected and in good order the depths are not up to the 14-ft. spring and 10-ft. neap standard. Very considerable expenditure would be required to bring it up to this level.

(hh) **ABERYSTWYTH**.—At present none of the berths, which are all tidal are up to a 14-ft. spring and 10-ft. neap standard. It would be possible however without heavy outlay to provide such accommodation. In view of the fact that Aberystwyth is an important Welsh town such an improvement deserves very careful consideration.

(ij) **BARMOUTH**.—The depth over the Bar is given as 16-ft. at H.W.S.T. which would give over 12-ft. at H.W.N.T. and there are greater depths within. There is, however, only sufficient depth at the tidal quay at H.W.S.T. for boats of under 12-ft. draught as a maximum. It would be possible to construct a wharf fronting the present wharf to take full advantage of the draughts that can come in over the bar. As the cost would not be heavy this might be worth attention.

(kk) **PORTMADOC**.—A very small amount of deepening would bring the present deepest tidal berth up to the 14-ft. spring and 10-ft. neap draught standard, but the Harbour-

Facilities for Coastal Trade at British Ports—continued

Master gives less draught owing to the changes which are liable to occur in the channel. In view of the fact that this port was mainly a slate exporting port and that this trade has fallen away it is doubtful if money would be available for improvements.

(ll) PWLLHELL.—This harbour is below the 14-ft. spring and 10-ft. neap standard and is stated to be silting. It might be possible to overcome its drawbacks by remodelling, retaining the inner harbour for the use of light draught boats and as a sluicing reservoir.

(mm) PORT PENRHYN.—This is a privately-owned tidal harbour, exclusively devoted to the trade of the Penrhyn Slate Quarries, it is below the 14-ft. spring, 10-ft. neap draught standard. To bring it to that standard would involve some deepening of the quays.

(nn) CONWAY.—This tidal port could be brought to the 14-ft. spring and 10-ft. neap draught standard by carrying the face of the quay a little further out, without any deepening being necessary.

(oo) RHYL.—Vessels of slightly under 13-ft. draught can berth at the tidal quay at springs, but at neaps the depth would be too small for general consideration. It could be deepened and improved, but the approaches are awkward.

(pp) CONNAH'S QUAY.—There are sufficient depths at the berths at this tidal quay for the 14-ft. spring and 10-ft. neap standard. The obstacle to vessels of this or greater draughts coming to these berths is stated to be a shoal in the River Dee about 2 miles down stream of Connaah's Quay.



A Steamer Coaster of 11-ft. 6-in. draught carrying 650 tons of Cargo.

(qq) WARRINGTON.—There is a depth of 8-ft. at L.W.O.S.T. and 20-ft. at H.W.O.S.T. at one extensive wharf at Warrington besides other wharves with lesser depths, but a general lack of depth and local river bars in the Upper Mersey would prevent full use being made of these depths.

(rr) LANCASTER.—Glasson Dock, which is a wet dock, 5 miles below Lancaster can take 19-ft. draught vessels at H.W.O.S.T. corresponding to 12-ft. at H.W.O.N.T. The tidal quay adjoining has an equal depth at its outer end, and though shoaling to 14-ft. at the inner end at H.W.O.S.T. it could be cleared out and brought to the 14-ft. spring and 10-ft. neap standard without much expense. The Harbour Master stated that the quays at Lancaster, which are tidal, can only be reached by vessels not exceeding 11-ft. 6-in. draught at springs and 5-ft. 6-in. at neaps. The length of river to be dealt with would render the task of deepening to allow access to the quays at a 14-ft. spring and 10-ft. neap draught standard too costly to entertain under present conditions.

(11) From the above it appears that we may rule out the possibility of bringing the following up to a 14-ft. spring and 10-ft. neap draught standard:—

York	Barnstaple
Swane Bridge	Bridgewater Dock
Heybridge	Porthcawl
Maldon	Carmarthen
Sandwich	Haverfordwest
Exeter	Fishguard Old Harbour
Truro	Warrington
Newquay (Cornwall)	Lancaster (Town Quays)

Of the remainder a number could be brought to this standard without any large outlay, some merely by the removal of silt which has been allowed to deposit, others by alterations at the quays themselves, such as forming a piled face at a few

feet in front of the existing quay in order to get deeper water berthage.

Others, such as the entrance to the large inland sheet of water on which Orford stands, Rye Harbour, the mouth of the Teifi leading to Cardigan, Rhyl and the approaches to Connaah's Quay on the River Dee are estuarial problems. Others, such as Southwold, Aberaeron, and Pwllheli would involve reconstruction or re-modelling of harbour works.

(12) A consideration of the probable effect in fostering coastal trade would be necessary in order to arrive at any conclusion as to how far expenditure would be justified on remedial measures. Referring to the ports in List "F" which would remain for consideration after striking out those mentioned in the first part of S. II, it will be seen from the details in S. 10 that at a number of them work would not be heavy, e.g., North Sunderland, Bridlington, Whitstable, Par, Tenby, Aberystwyth, Barmouth, Portmadoc, Conway.

Of those which probably would and in some instances certainly involve more extensive outlay there are:—

Selby	Bridgewater (Combwich Reach Scheme)
Wells-on-Sea	Cardigan
Southwold	Aberaeron
Orford	Pwllheli
Margate	Rhyl
Rye	Connaah's Quay
Bideford	

(13) To bring Selby to a 14-ft. spring and 10-ft. neap standard would involve the improvement of the River Ouse to give greater depths. Wells-on-Sea, the only working port on the long stretch of coast between King's Lynn and Yarmouth, should be of considerable value to trade, but any improvement to a 14-ft. spring and 10-ft. neap standard would involve improvement of a very lengthy approach channel and this approach is a sea creek with no river to assist in scouring the channel. Southwold is one of the few sea coast resorts not served by the railway. This would lend weight to the rehabilitation of its harbour, though the place of the railway is taken to some extent by road transport from Lowestoft.

The desirability of bringing Rye Harbour to the 14-ft. spring and 10-ft. neap standard or even to a 14-ft. neap standard deserves investigation from the fact that it is the only port on the long stretch of coast from Folkestone to Newhaven and could serve a considerable area of country apart from possibilities in handling local stone and sand for coastal transit. Folkestone and Newhaven, moreover, are railway ports mainly or entirely designed for rail traffic and distribution by rail.

Bideford also merits consideration as it serves an important area of country and the same applies to Bridgewater, Cardigan and Pwllheli. Aberaeron would probably be ruled out by its private owners on the score of the expense involved not being commensurate with any trade prospect. The difficulties of improving the approach to Rhyl and the fact that the town is served by rail and road from the Port of Liverpool and from Chester render it unlikely that any considerable expenditure would be justified by increased trade. Improvements in the approaches to Connaah's Quay depend on the general improvement of the navigation of the River Dee below this port.

Freeport Development at Bremen.

Following the statement in the article on the Ports of Bremen and Bremerhaven, which appeared in the February issue of this Journal, it is to be gathered from reports in the German press that the reconstruction of Freeport Dock No. 1 at Bremen is progressing satisfactorily and that the length of 723 metres of quay frontage will be taken into service once more from June onwards in sections of 200 to 300 metres each, so that the whole length will be in service again by late autumn. In this way the entire quay on the south side of the harbour will have been brought to a condition corresponding to the demands of present-day traffic. It is expected that work will soon be begun on the north side of the quay.

Through the improvements also made in the railway tracks and crane service, etc., the capacity of the harbour will be increased by at least 25 per cent. The loading stage in front of the sheds is being widened to 4 metres, thus enabling the use of electric trucks to be introduced. The old hydraulic cranes of 1.5 to 2.4 tons carrying capacity are being replaced by electrically-driven cantilever cranes with large capacity. In order that the cranes can be exchanged between Harbours I. and II. in case of need, the same crane gauges are being used as in Harbour II.

Due to this reconstruction there will be a total increase in the number of cantilever cranes between the two harbours of 29, of which 22 cranes of three tons will be new and seven cranes already available transformed into cantilever cranes. About the end of the year a further five electric cranes are to be transformed into cantilever cranes. Apart from the remainder of the hydraulic cranes in Harbour I. on the north side, all the cranes of the two harbours will have been transformed into cantilever cranes.

Brazilian Port Improvements

Construction Schemes in Progress

Particulars of port improvement schemes in hand at several Brazilian ports are given in the Department of Overseas Trade Report on Economic and Commercial Conditions in Brazil, just published (Stationery Office 3s.). Among the places referred to are Sao Sebastiao (a new port in the State of Sao Paulo), Recife (State of Pernambuco), Maceio (State of Alagoas), Fortaleza (State of Ceara), Paranagua and Rio de Janeiro.

bonds for 60,000 contos of reis, of which 43,000 contos are being devoted to the financing of the port works.

Maceio (State of Alagoas). For many years the State of Alagoas has felt the need of a proper harbour to serve the State capital, but the efforts made to obtain Federal approval for a scheme of port works at Jaraguá, near Maceio, were only crowned with success in 1936. A contract has been signed by



View of the Quays and Shipping at the Port of Rio de Janeiro.

Sao Sebastiao (State of Sao Paulo).—On the 13th March, 1936, the Government of the State of Sao Paulo approved a tender submitted by the Companhia Nacional de Construções Civis e Hidráulicas for the construction of harbour works at Sao Sebastiao. The Federal Government has conceded to the State Government a term of 60 years for the construction and exploitation of this port, for which all materials can be imported free of duty. It is understood that the reason for the Government's preference for these contractors was that the firm offered incontestable technical advantages, greater durability of the works, and the almost exclusive utilisation of national materials. The technical advantages would appear to consist of the substitution of quays constructed with steel sheet piling (which would have to be imported) by a type of quay constructed of reinforced concrete. Works were started in April, 1936, and should be concluded by the end of 1937.

The construction of road communication with Sao Sebastiao is considered to be an essential preliminary to the efficient working of the port.

Recife (State of Pernambuco).—The Companhia de Mineração e Metallurgia do Brasil (Cobrasil), the contractors for the extensive port works, commenced in February, 1936, dredging the inner harbour which is destined for use as an airport. The section for hydroplanes will be dredged to a depth of two metres and already 700,000 cubic metres of materials have been removed. This is nearly half the estimated dredging required for the naval landing basin. A dredger and a hopper from Holland are being employed. Work has not yet been commenced on the sea-wall separating the hydroplane basin from the land planes port. The latter is to be constructed by filling in an area which is at present covered by the sea at high tide. The State Government of Pernambuco, through the "Caixa Economica Federal" in Rio de Janeiro, has issued

the State Government with the Companhia Geral de Obras e Construções (S. A. "Geobra"), and the work was formally declared open in February last. It is reported that the cost of the project is in the neighbourhood of 20,000 contos of reis and that the scheme should be completed within two years. Progress so far has been slow and the contractors are believed to have requested a revision of the contract agreement.

Fortaleza (State of Ceara).—The port construction project at Fortaleza, in the State of Ceara, has been held up through differences of opinion as to the most suitable location for the harbour. The firm of Christani & Nielsen submitted a tender for the construction of a pier and a breakwater in front of the town, but the State Government procrastinated in their decision. In the meantime prices of materials and labour rose and the contractors stipulated a 10 per cent. increase on their tender price to offset these additional costs. The demands of the contractors were rejected by the State Government. Two new electric 3-ton cranes from Germany have been installed at the Customs House Pier but their location is not suitable and they are not at present in operation.

Ilhéos (State of Bahia).—A decree of the 15th May, 1935, authorised the revision of the contract signed between the Federal Government and the Companhia Industrial de Ilhéos, for the construction and operation of the Port of Ilhéos.

Paranaguá (State of Paraná).—A decree of the 8th November, 1935, authorised the construction of quays, warehouses and other works in the Port of Paranaguá, at an estimated cost of 19,848 contos of reis. The concessionnaires of this port are the State Government of Paraná.

A number of commissions of technical experts have been busy for some months past investigating conditions at various ports, the navigability of rivers, etc., throughout the country. Most of the schemes which they have been called upon to study

Brazilian Port Improvements—continued

are in connection with unimportant seaports, canalization of lesser known rivers, etc., and are not considered to be of sufficient interest to be reported in detail, since such projects are of little value from the constructional point of view, whilst the ports or rivers in question are not of sufficient importance, at this stage, to interest United Kingdom ship owners.

At the instigation of a group of mineral ore exporters, studies have been carried through with regard to the construction of a deep-water port at **Mangaratyba** which would permit the embarkation of mineral ore on moderately large vessels. From the point of view of the Central Brazilian Railway this would be a feasible plan, as the coaling ships bringing fuel for the Company at present cause considerable congestion at the Maritima station docks in Rio, and the position of Mangaratyba—some 40 or 50 kilometres south of Rio—would be very convenient for the distribution of coal to points in the interior.

Port of Rio de Janeiro.—The Port of Rio de Janeiro, which had up to the 16th January, 1936, been under the control of the Federal Government, the contract with the former French Company having been rescinded in May, 1934, is now administered by an autonomous body known as the Administration of the Port of Rio de Janeiro. The governing body consists of six members, two nominated by the Minister for Transport and Public Works, two representing the ship owning interests, and one each representing the interests of industry and commerce. The administration collects the revenue of the port, paying for its operation, maintenance and any improvements.

This system of port management is a novel one in Brazil and the results are being watched with interest.

The Port of Copenhagen.

The annual report of the Port of Copenhagen which has now been issued shows that the steady increase in traffic and goods of Copenhagen Harbour which has been characteristic for the past few years, although not great, has been maintained this year also, presumably on account of the improvement in the freight market during the latter half of the year. The increase in tonnage is 395,000 net reg. tons on 1935, and the increase in goods loaded and discharged at the port is estimated at about 300,000 tons.

Inland traffic shows a slight decline, both in number of ships and tonnage, while foreign traffic shows an increase in the number of ships which arrived at the port and an increase in net tonnage of 460,000 tons.

The tourist traffic increases steadily. During the summer of 1936 the port of Copenhagen was visited by 71 cruising liners, with a total tonnage of 470,000 net reg. tons, an improvement of 16 ships and about 50,000 net reg. tons on the previous year. Besides the above vessels, 1,175 ships put in at Copenhagen for orders or provisions, which is a slight decline on the corresponding figure for 1935.

As far as the turn-over of goods is concerned, an estimate based on the first nine months of the year shows that the total trade of the port during 1936 was about 6,240,000 tons, which is an increase of about 235,000 tons on 1935; however, this figure may prove to be as large as 300,000 tons when the final returns are forthcoming.

Port Alterations at Bombay.

The Bombay Port Trust have decided to carry out extensive improvements to Ballard Pier. Two schemes have been evolved, one for improving the facilities for handling baggage, and the other intended to increase the comfort of passengers disembarking. The total cost of the alterations is estimated at Rs. 2 lakhs. The first scheme, which has already been commenced, allows for the extension in the width of the present baggage hall by 20-ft. plus a 10-ft. covered footway outside, with a further footway 10-ft. wide uncovered. The present delivery counter will run the length of the building in the extended portion, and outside this a corridor for passengers checking up their luggage on the delivery country has been allowed for. This will be a good deal wider than the present passage.

Fans will be installed and additional doorways will be opened. The clearing of passengers' luggage from the delivery counter by agents or porters will be facilitated by the covered footpath outside. The result of this arrangement will be that while at present only 533 luggage berths are provided, an additional 227 will be added, making a total of 760, which is considered ample provision for the biggest ship likely to visit Bombay.

A new method of handling mails has been evolved, so that in future this operation will be carried out without causing any inconvenience or delay to the passengers. These, together with other improvements to the accommodation of friends waiting for passengers to arrive, and of the passengers themselves while their baggage is being checked, are expected to fulfil a long-felt need.

The Dock and Harbour Authorities' Association

(CONTRIBUTED).

Following the publication of the Annual Report of the above in the March issue, a short description of the origin and work of the Association will be of interest.

Formation.

For many years prior to 1919, in which year the Association was formed, a Committee representing 10 or more of the principal public Dock Authorities met periodically for the purpose of considering matters of general interest, such as Public Bills and Regulations affecting statutory authorities, and took such action thereon as was necessary for safeguarding the general body.

During the War the attitude at first taken up by the Government in repudiating claims by a number of Authorities for Dock and Harbour Dues, made it desirable that this unofficial body should be replaced by a Central Association clothed with a general authority to act in the common interest.

Although, as has been said, it was the action of the Government during the War which brought the question of the formation of the Association to an immediate issue, there is no doubt that sooner or later the need for such a body would most certainly have arisen.

In a modern community it is almost essential that individuals or bodies in the same line of business should have a central organisation so that views may be exchanged, contacts made, and decisions taken on questions of common interest and policy, and resistance organised against the encroachments of bureaucracy.

The Association was accordingly formed in December, 1919, with Lord Devonport, the then Chairman of the Port of London Authority, as the first President, the late Sir Hugh Bell Chairman of the Executive Committee, and the late Sir William C. Thorne, the convener of the old Docks Committee, as Hon. Secretary.

Scope.

The objects of the Association as laid down in the Constitution, are to consult and co-operate on such questions of common interest to the Members as may from time to time be deemed desirable to take up.

This provides a wide field of activity and involves contact with a number of Government Departments and a good deal of work of a Parliamentary character.

Membership.

Membership of the Association is under the Constitution open to Public Dock, Conservancy, and Pilotage Undertakings, the Manchester Ship Canal Company, and also to such Municipalities as own or control harbours or docks in the British Isles.

There are at present 53 members representing approximately 72 per cent. of the total tonnage of vessels with cargoes trading to the Ports of the United Kingdom. The docks owned by the Railway Companies account for a considerable proportion of the other tonnage, and the remainder is accommodated in docks and harbours not represented by the Association.

Honorary Membership has been extended to the Harbours Association of New Zealand, the Interstate Conference of Australian Harbour Authorities, and the Bombay Port Trust.

Structure.

The Members of the Executive Committee are elected at the Association's Annual Meeting held in February, for seven districts in England and Wales, two in Scotland, and two in Ireland, from nominations submitted by Authorities in the respective districts.

The Committee normally meets seven or eight times in a year. The detailed work is performed by standing sub-committees appointed by the Executive Committee for the year. The personnel of the sub-committees consists for the most part of officials of the Member Ports, and they meet at the offices of the Association in London, their travelling expenses being defrayed by the nominating authority.

Of recent years the Parliamentary Sub-Committee, which meets to consider Bills in Parliament and to prepare, with the help of the Association's Parliamentary Solicitor, protective and other amendments, is the most active of the Sub-Committees.

A valuable feature of the Association's work is the inter-communication between members through the central office.

Oil Pollution of Coastal Waters

Ports and Separator Equipment

The following report of an important debate on the provision and use of oil separators in ports and harbours is reproduced in slightly abridged form from *Lloyd's List and Shipping Gazette*.

In the House of Lords on April 7th, the **Earl of Ilchester**, in a motion calling attention to the lack of adequate facilities in many British harbours for cleansing bilges and tanks in oil-burning and oil-carrying vessels, urged that all commercial harbours used by those types of vessels should be supplied with separator barges. He also referred to the meagre use made of oil-separator equipment where provided, the explanation of which, he thought, was that the cost was too high.

On the other hand, he drew attention to the plant which had been in use in Liverpool for the last three years. It was operated by Grayson, Rollo and Clover Docks, and was known as the Wheeler system. Cleaning with it, it was claimed, could be done in one-tenth of the time. Consequently, and being a mechanical device, it was far cheaper. One installation was sufficient for a whole port, and the oil recovered was used to operate the plant. Accidents to ships and men were practically unknown, and the insurance was one-quarter of the original charges. All his inquiries corroborated those views, and he urged the Board of Trade to examine this process and, if satisfied, to insist on the plant being installed in all our principal ports, or in any case to insist on whatever they considered was the best separator.

Lord Ritchie of Dundee, speaking on behalf of the Dock and Harbour Authorities' Association, and as chairman of the Port of London Authority, said that so far from it being the fact that there was a lack of those facilities in the harbours of the country, the facilities were, in fact, in excess of the demand. Referring to the experience of his own port, he said they provided separator barges at a very substantial cost some years ago. In 1933 they were used on 18 occasions, in 1934 on three occasions, in 1935 on 4 occasions, in 1936 on 3 occasions. In the case of Glasgow, in 1933 their oil-separating barge was used by 15 vessels, in 1934 by 9, in 1935 by 11, and in 1936 by 8. In the case of the Port of Bristol, in 1934 their separating barge was used once, in 1935 not at all, in 1936 on 3 occasions, and in 1937, up to date, on 3 occasions.

The Port of London Authority had provided those facilities at considerable expense, and that remark also applied to the other harbour authorities, and, as to the suggestion that the charges were too high, he could only say that the return which the various harbour authorities got on the provision of those facilities was extremely small, and that the expenditure had formed a considerable charge on the revenue of the authorities.

The **Earl of Crawford** said the general impression was that Liverpool had got an appliance better than anything to be found in London, and that at Liverpool they could operate far more quickly, far more cheaply and in every way far more successfully.

Earl Stanhope, replying for the Government, said there were really three different methods to be considered. The first was the provision of separators on board ship; the second was the provision of zones within which oil might not be discharged; and the third was the provision of separating barges in the ports around our coasts. As regards, separators in ships, it was impossible to obtain agreement from other countries. In regard to the installation of separators in ships already in existence not only would the separators cost a good deal of money, but there would be a loss of cargo space which would be a serious matter to the industry. In the matter of new ships the situation was somewhat easier, but there also the International Committee found that it would be extremely difficult to get agreement on a Convention which imposed compulsion. It was thought that it would cost £1,500 to put a separator which would be of any effect at all into a tanker, and in the case of ordinary oil-burning ships the cost would be about £300 per ship on a very conservative estimate. He was informed, however, that that was not the whole of the difficulty, and that no one was quite satisfied that there was any separator yet found which would deal effectively with this trouble.

Then there was the question of the various types of oil which had to be got rid of somehow. The sludge at the bottom of the bilges was partly composed of rust, partly of oil, and partly of all sorts of other beastialities. There was a good deal of creosote and matter of that kind in that conglomeration. No separator, he thought, had yet been found which would deal effectively with that type of matter, which was the most deleterious of all these substances.

As regards zones, our own experts were not satisfied that 50 miles would be sufficient, and they thought that a wider area would be better. But our difficulty in all these matters was to get international action. What was wanted was combined action by all the Powers. If we got too far ahead we should not attract other Powers to follow us. We might be a little ahead, but we must not be too far ahead if we wanted to get combined international action. He had no doubt that British shipowners had given stringent instructions to their captains to observe strictly the 50-mile limit, and that, as far as could be discovered, it had been observed almost universally by the captains of the big ships. That, in the Government's view, accounted for the improvement which in fact had taken place.

As to the use of separators in ports, he supported what was said by Lord Ritchie that where these had been provided they had been little used. As to the new separator, the "Tulip" at Liverpool, he thought the Earl of Crawford might be a little surprised to hear that whereas the Port of London Authority, who had two vessels called "Gog" and "Magog," charged 35s. per hour, the "Tulip" at Liverpool, for a minimum of eight hours, charged six guineas. In the Port of London Authority the capacity was only 50 tons an hour, but that of the "Tulip" was 130 tons. It was not as fast as some of the other methods which had been provided, but he was given to understand that the method was probably the best.

The Government were anxious that the League should again consider this matter and see whether the draft Convention which was put up by the Committee of Experts could now be introduced and, with or without modification, accepted by the great maritime Powers. The last year or so had not been very suitable for this kind of meeting to be summoned, to get the chief maritime Powers to attend. That was no doubt why the time had been somewhat long. Now that the prospects were very much better, he knew that the Secretary of State for Foreign Affairs would be very glad if a further meeting was called to consider the subject, and the Board of Trade would certainly take a similar view. The Board of Trade's feeling in regard to provision in harbours here was that it was really a matter which should be taken up between the harbour authorities and the shipowners. It was obviously no good supplying any further plant unless it was to be used a good deal more than it had been in the past.

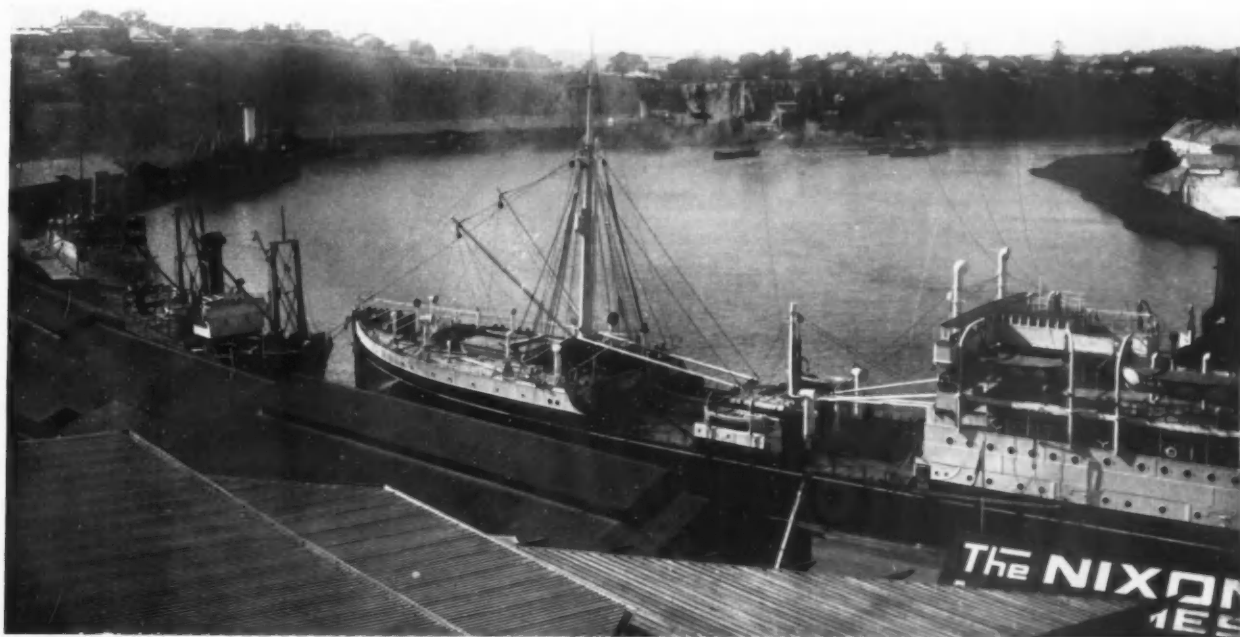
Greater Hamburg

The German Government have enacted a law, which may be taken as the first step towards a simplification and unification of the Reich's territorial structure, by which Germany's greatest sea port will be freed from certain difficulties which have hampered its development for many years. It may be remembered that the late Burgomaster Dr. Petersen made great endeavours towards reaching an agreement with Prussia to obtain certain territories which Hamburg badly needed for expanding its system along the River Elbe. At that time—about 9 years ago—most of Dr. Petersen's demands remained unachieved, now, however, since these questions are no longer a matter of negotiations between the states, but are decided by the Reich, Hamburg is getting more than was ever asked for. With regard to harbour facilities it is particularly important that the hitherto Prussian towns of Altona, Harburg and Wilhelmsburg are united with Hamburg. These territories have always formed an economic unit and the senselessness of State frontiers within the Reich has been particularly obvious in the case of Hamburg, where the natural growth of the greatest German port was virtually checked by those frontiers. The new law removes the main obstacle and clears the way for a more rational utilisation and—if it should be necessary—an expansion of the existing harbour facilities on the River Elbe. Hamburg, on the other hand, has to cede some minor exclaves to Prussia; its outport Cuxhaven is consequently also to be transferred. Though it is undoubtedly desirable to have main port and outport under the same administration, this condition of the agreement will hardly prove to be of very great practical importance. Prussia has expressed her willingness to co-operate closely with Hamburg in all shipping questions; hence, there is no reason why Cuxhaven should not fulfill its task as an important outport as smoothly as hitherto.

The same law puts an end to the independence of the former Free and Hanseatic City of Luebeck which now becomes part of the Prussian Province of Schleswig-Holstein. As a matter of fact, this decision is of little practical significance, it may even help to strengthen the economic situation of that Baltic port. Nevertheless, it is difficult not to feel a little sorry that the old and proud tradition of Luebeck—once the "Queen of the Hansa"—could not longer be continued.

Queensland Harbours

Excerpts from the Report of the Department of Harbours and Marine for the Year ended 30th June, 1936



Circular Quay, Brisbane.

Shipping.

A FLEASING fact to be noted is the continual steady growth in the number of vessels piloted into the Port of Brisbane, which was maintained during the financial year under review. Not only was there an increase in the numbers, but the average tonnage of the vessels also increased, and that year marked also the passing of the 5,000,000 gross tons of shipping piloted at the port. In all, 615 vessels with an average of 8,131 gross and 1,999 net tons, and totalling 5,244,427 tons gross, have been brought into the various wharves by the Pilot Staff. Three hundred and thirty-six vessels have been moved between the various wharves.

Brisbane.

The North-East Channel continues to be subject to the sand movement, and, although it has not been necessary to reduce the available depth of water, it is narrow, and becoming more tortuous.

The North-West Channel remains unaltered, and by far the greater majority of the vessels entering and leaving Moreton Bay have to avail themselves of this channel.

All the navigation marks have been maintained and are in good order. During the cyclonic disturbance in March, which not only dislocated traffic but brought to a standstill all vessels seeking to enter and leave Moreton Bay for several days, all the gas buoys of the North-East Channel were swept out of position. None, however, were lost out of the bay, and they were replaced immediately the weather moderated.

Port Improvement.

The objective of an increased depth in the lower reaches of the river and ultimately as far as Hamilton has been furthered considerably during the year. Practically the whole of the difficult material, excepting the actual diorite dyke in the Lytton Reaches, has now been removed to a depth of 30-ft. by a width of 300-ft. Some of this material, which extends from just above Luggage Point to Lytton Wharf, is almost as hard as the diorite, but, being brecciated, the powerful dredge "Platypus II" was able to remove it. The strengthening of this dredge has proved quite successful.

No floods or freshes occurred in the Brisbane river during the year, so that maintenance dredging was at a minimum, enabling development work to proceed uninterruptedly.

By arrangement with the Queensland Government, the services of the suction dredge "Morwong" were made available to the Commonwealth Government to execute some urgent dredging at Darwin. The dredge left Brisbane on 20th April, and, at date, is back at work on the Brisbane River, having

made successful voyages both ways, and a highly satisfactory job was made of the dredging at Darwin. The dredge was away four months and one week and removed 17½ loads, each nominally 1,000 cubic yards, from the Darwin Harbour.

Brisbane River.

Bar Cutting.—Very little dredging was required in the Bar Cutting, which is 100-ft. wide and carries from 29 to 30-ft. at L.W. in as far as Luggage Point. Inside Luggage Point and in the emergency swing basin 28-ft. is the minimum depth.

Pelican Bank Cutting.—An additional 100-ft. width to 30-ft. at L.W. was made on the western side of this cutting. There are still a few places carrying 29-ft. on the eastern half of the cutting. It may be necessary to put a shot or two in some of these hard places.

Lytton Rocks Cutting.—This cutting now carries 30-ft. throughout, with the exception of the diorite dyke, for the removal of which powerful drilling machinery is now available. There is also a small area of clay above Lytton Wharf on which the depth is 29 feet.

Lower Lytton Cutting.—No work was done here during the year. There is a minimum depth of 28-ft. at L.W.S.

Upper Lytton Cutting.—A small amount of work was done by the dredge "Morwong." The centre 200-ft. has been dredged to 30-ft. for a length of about 2,700-ft.

It is anticipated that these two latter cuttings will be deepened to 30-ft. during the coming year.

Pinkenba Cutting.—Except for a small amount of dredging on the centre line, nothing was done in this cutting, which carries a depth of 28-ft. on the centre line.

Eagle Farm Flats.—This cutting carries a depth of about 26-ft. 9-in., and will require maintenance dredging in the near future.

Parker Island Cutting.—The minimum depth is 26-ft. 9-in. here also.

Quarries Reach Cutting.—This cutting requires frequent maintenance dredging. It carries about 26-ft. 9-in. at present.

Hamilton Reach Cutting.—A considerable amount of work was done at the upstream end where the swinging boom had to be restored and extended, and approaches to the new wharves provided. The downstream portion of the cutting has deteriorated to some extent and will be restored by the "Remora."

Bulimba Reach.—This reach is in good order, carrying a depth of 28-ft. generally, with 26-ft. in the swinging basin. The suction dredges were frequently employed during the year, particularly in maintaining the swinging basin. As the larger vessels are now berthing at the Hamilton Wharves, it is intended to reduce the dimensions of the Bulimba swing basin to lessen the maintenance required.

Queensland Harbours—continued

Town Reach.—The cutting through this reach requires frequent maintenance. The two suction dredges were employed at intervals during the year to provide a depth of 24-ft. at L.W.

South Brisbane Reach.—The depth of 24-ft. at L.W. was maintained during the year, and no dredging was necessary.

Bulimba Point, Kangaroo Point, and Gardens Point.—A considerable amount of work was done at Kangaroo Point by the dredges "Hydra" and "Maryborough" in rounding off the Point to conform to the new regulating line.

No dredging at Bulimba or Gardens Points was necessary.

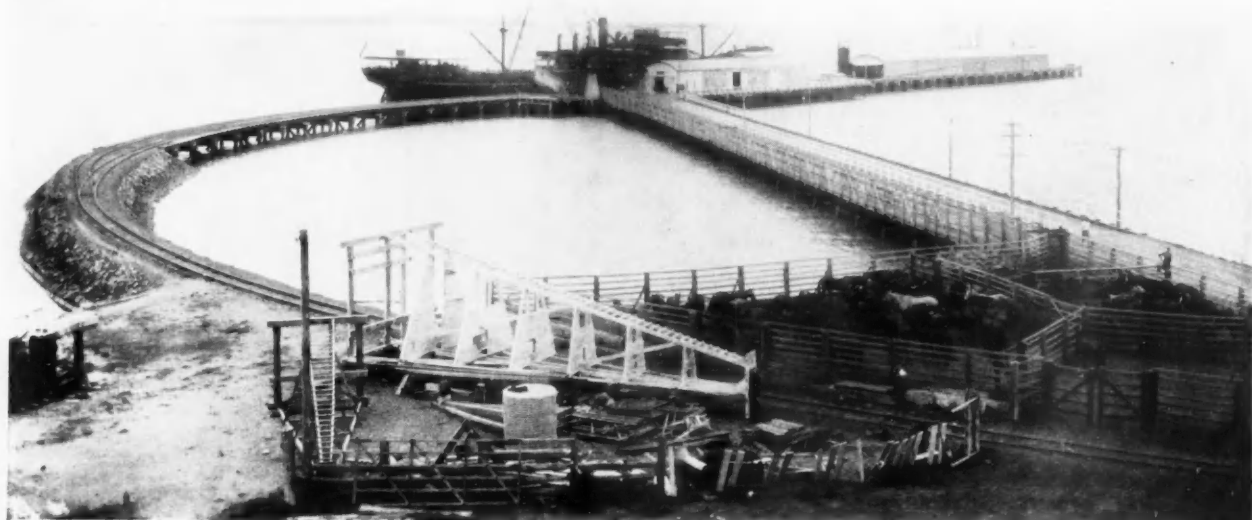
Berthages.—Maintenance dredging was carried out for various wharf-owners. The Abattoir berth was completed to 30-ft., a considerable quantity of the material being rock. The dredging of the berthage and approach for the Newstead Wharves and Stevedoring Co. Pty. Ltd. occupied the dredge "Hydra" for four months and the "Platypus" for two months. A berth with a depth of 28-ft. and an approach was dredged for the extension of the Brisbane Stevedoring and Wool Dumping Company at Hamilton.

the remainder in the winter months. This has prevented the work being carried out progressively from one end. The total length of the wall is 8,550-ft., of which 2,650-ft. is completed and pitched, while 2,650-ft. has its full quantity of stone deposited *in situ*. Forty men are employed.

Regularisation of the Kangaroo Point Bend of the Brisbane River under the direction of the Works Board of the Bureau of Industry.

Early in July, 1935, the dredge "Maryborough" was replaced by the "Hydra" preparatory to the despatch of the former dredge to Bowen Harbour. The "Maryborough" had removed 161,863 tons of material from the eastern side of Kangaroo Point.

The "Hydra" continued the work until 19th November, when she was removed to the Bulimba Reach to excavate the berthage for the new wharf of the Newstead Wharves and Stevedoring Co. Pty. Ltd., and approaches thereto. The total



Jetty and Shipping, Gladstone.

Hamilton Reclamation.

Good progress was made with the development of this locality. The reclamation was carried downstream as far as possible with the present pipeline station. This is about 1,300-ft. below the new wharves, and the reclamation has been built up to its permanent level. When the pumping station had to be dismantled to make way for the extension of the Hamilton Wharf, a pipeline was laid under the upstream portion of the wharf. This was placed in a position to pump dredgings on to the site of a new approach roadway on the alignment of Nudgee road. The material removed from the river in developing the approach to this wharf proved very suitable for reclamation, and a considerable amount of that work was done therewith.

Work on the roadway has progressed, about 2,000 feet being completed and an additional 100-ft. partly done. The vehicular traffic to these wharves is particularly heavy when tourist vessels are in port, and a large area for parking has been prepared. In addition, footpaths have been constructed. Twenty-four men are employed.

Kangaroo Point Quarry.

This quarry was in operation during the year, the labour being supplied under the Rotational Relief Scheme. During the year 15,558 tons of spalls and spoil were sent to Bulwer Island training wall, in addition to stacking some stone on the quarry floor.

Work on this quarry has been reduced as operations in Petrie's Bight progressed. The number employed is now only seven, whilst thirty-six are employed at Petrie's Bight quarry.

Training Walls.

The work of raising the wall to a height of 10-ft. above L.W. was carried on continuously at Bulwer Island, the stone being punted down from the Kangaroo Point and Petrie's Bight quarries. Stone has been deposited and the wall formed in places along the whole length as far up as Pinkenba. Owing to shallow water, advantage has to be taken of the tides to work at portions of the wall, and weather conditions make it necessary to work at the downstream portion in summer and

quantity removed from Kangaroo Point to 30th June was 328,472 tons out of the estimated amount of 838,600 tons.

At date the dredging of the Point is again in progress. On the Petrie's Bight side of the river the road-widening at the rear of the wharves has been carried on continuously, 60 men being employed under the rotational relief scheme, now discontinued. To date 115,000 cubic yards of schist rock have been removed and a commodious roadway provided.

The reconstruction of the wharves to the new alignment is rapidly progressing. A new office in reinforced concrete was built for use of the lessees of wharfage. The berthage was extended 100-ft. downstream, necessitating the submarine excavation of 5,572 tons of solid porphyry, and a new cargo shed 50 by 210-ft. constructed. The middle berth has been rebuilt with a straight front 430-ft. long, and upon it a new shed 420 by 90-ft. is under construction.

The widening of the river by the removal of the projecting cliff below the wharves is affording employment for 36 men. The cliff has been taken down to H.W. level, and below tide level as much of the rock as possible will be taken out in the dry by leaving a bulkhead of rock on the river side of the excavations, to be subsequently removed by the submarine plant. So far, 50,232 cubic yards of stone and spoil have been removed. One hundred and fifty men are now employed on these works, exclusive of the crews of the dredge and her attendant plant.

Water Hyacinth.

This weed has given much trouble. Early in the year a small party of men were kept on with a floating camp to keep the Bremer River clear for traffic in anticipation that a good fresh in the Upper Brisbane and Bremer rivers would clean it up. Unfortunately, the only fresh which occurred—viz., on 18th November—was not of sufficient magnitude to effect this, and did more harm than good. A quantity of hyacinth was washed down to the city reaches, where the salt water destroyed it, and some of it was trapped by a boom at the Seventeen-mile Rocks, and prevented from working upstream until the water became salt. A considerable quantity was scattered along the

Queensland Harbours—continued



The Quay, Rockhampton.

rivers upstream, filling up the tributary creeks, and, with favourable weather, making conditions suited to its growth. The working parties were carried on until 25th January, when it was decided to discontinue.

As pointed out in the last report, water hyacinth does not originate in tidal waters, and it is impossible to keep the rivers free from it whilst it is allowed to grow in creeks, lagoons, and swamps from which it can be washed into the waterway.

Samples of the river water have been obtained from various localities to determine the amount of dissolved salts that is sufficient to destroy the hyacinth. Compared with standard sea water (Eau-de-Mer Normale, Copenhagen), which contains 35 parts per 1,000 of dissolved salts, the salinity of the river water was as follows:—

	Parts per 1,000
Shafston Reach, 5.30 p.m. 16-8-36	24.9
17-mile Rocks, H.W., 14-8-36	7.6
Goodna, H.W., 14-8-36	0.75
Riverview, H.W., 13-8-36	0.3

SAMPLES OF RIVER WATER TAKEN ON 24TH AUGUST

	Parts per 1,000	
(1) Mount Omaney Reach	7.0	No hyacinth
(2) Pope's Crossing	4.1	Hyacinth thin and sickly
(3) Cockatoo Island	2.25	Hyacinth slightly affected
(4) Chemical Works Crossing	1.3	Hyacinth thick and green

Gladstone.

The construction of the pitched wall behind the jetty was continued throughout the year, and, to date, 550-ft. have been completed.

New horse-yards have been constructed by the Board in a convenient position adjoining the jetty on the land recently reclaimed.

A start has been made on repairs to the jetty superstructure.

Rockhampton.

Maintenance dredging was carried out by the dredge "Fitzroy" at various localities on the Fitzroy River; 495,200 tons of material was dealt with.

The Harbour Board is having the dredge placed on the grid-iron at frequent intervals, and the condition of her hull plating carefully noted and reported here. So far, the special attention which the Board has paid to this matter and its treatment of the plating has proved quite satisfactory.

Both the upper and lower quarries were worked until early in February, when the lower quarry was closed down.

A start was made early in the year on the construction of a training wall on the north side of the channel opposite Hawk Point, which is known as the "Central Island Wall."

The total output for the upper quarry was 33,130 tons, and for the lower quarry 15,852 tons.

The construction of a new stone punt of 110 tons capacity was completed, and the punt equipped with a 50-ft. pile frame.

General maintenance of the wharves and buildings and floating plant has been attended to.

Mackay.

A commencement was made on the southern breakwater construction at the Outer Harbour works in August, 1935, a dragline crane being used to deposit the stone; 11,800 tons were deposited, when work was suspended during a change-over to a telfer crane, constructed specially for the purpose. By the end of November, 51,048 tons of stone had been placed. The work was well done, but the progress and the unit costs



Townsville and Harbour from Castle Hill.

Queensland Harbours—continued*Wharves and Shipping, Townsville.*

are unsatisfactory. Payments to the contractor on the percentage basis were discontinued pending a promised improvement. By the end of February, 90,715 tons of stone had been placed, but the unit cost still exceeded the contract price considerably. However, as the weather had been exceptionally unfavourable, the contractor was allowed to carry on, at the reduced payments, until the end of June, when a further complete audit of the expenditure showed that it would be quite impossible for the contractor either to complete the work within a reasonable extension of the contract time or at the contract unit price; 182,558 tons of stone had been deposited at a cost of 7s. 8d. per ton, the contract price being 3s. 8d.

A circular concrete reservoir of 300,000 gallons capacity was built on a hillock overlooking the harbour, and about 110-ft. above wharf level. Water is electrically pumped from the Board's well on East Point and reticulated from the reservoir through fibrolite piping.

Bowen.

On 17th September, 1935, the dredge "Maryborough" with the barges "Stingaree" and "Bonito," left Brisbane for Bowen. They arrived there on the 23rd. This dredge and attendant plant have worked continuously (holidays and small stoppage due to a coal strike excepted) to date.

So far, the Entrance Channel has been deepened to 20-ft. at L.W., and about three-quarters of the basin area to 21-ft.

The Board spent £770 during the year on the maintenance and repairs to the old wooden jetty.

Townsville.

The dredge "Cleveland Bay," after completion of her overhaul, proceeded with the deepening of the Platypus Channel to 26-ft. at L.W.S. The total width of the eastern and western side cuttings together is 250-ft. After the Christmas holidays the entrance channel to Ross Creek was cleaned up to 16-ft. at L.W.S. over a length of 5,891-ft. by a width of 120-ft.

A depot for the storage of zinc concentrates capable of storing 10,000 tons was constructed on the reclaimed area inside the concrete pier.

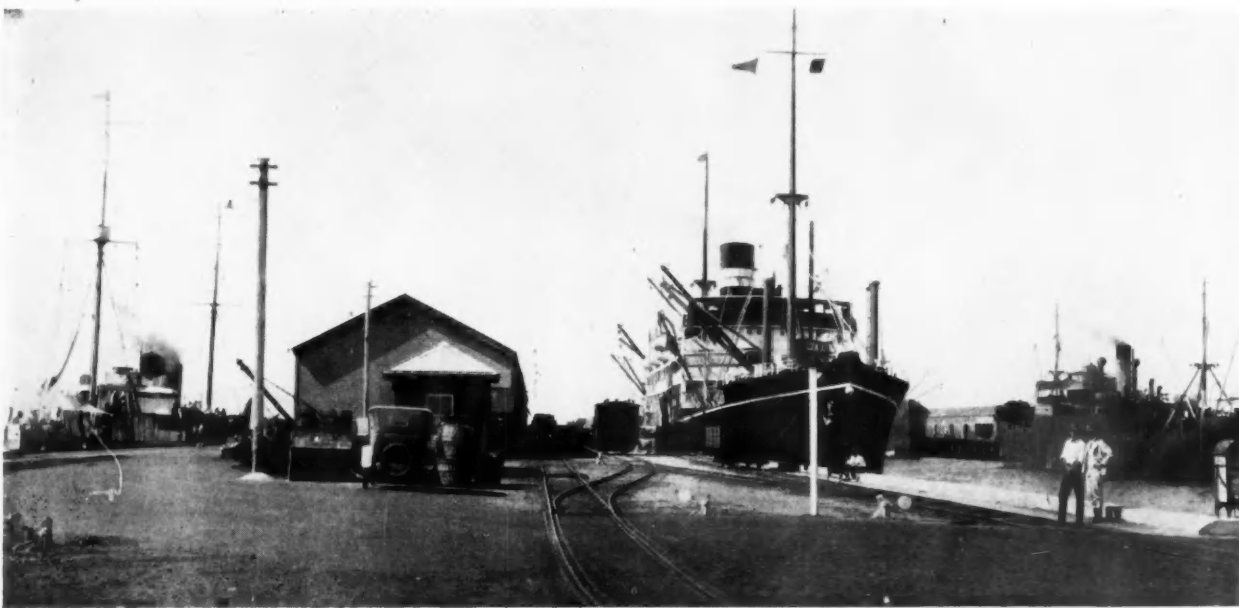
A rearrangement of the railway lines was made by the Railway Department to facilitate traffic.

A rubble wall to contain further reclamation material is under construction. This area is in front of the Pilot Station reserve.

Mourilyan Harbour.

During January and February some repair work was carried out to the wharf, including reconditioning damage done by collision.

Apparently the white ant attack on the sugar sheds and wharf has now been subdued. After many unsuccessful trials of various poisons and termiticides, including creosote and kerosene, the pests have at last been brought under control. A mixture of creosote and crude oil in equal parts has been used on the last two occasions, but whether the use of this mixture accounts for the good results or they are the combined effect of all the poisons, it is too early to say.

*Wharves and Shipping, Cairns.*

Queensland Harbours—continued

Cairns.

The dredge "Trinity Bay" removed 645,150 tons of silt from the Entrance Channel, the material being dumped at sea. She also lifted 33,900 tons from berthages and 102,500 tons of sand from Pine Creek used for reclamation purposes at the rear of No. 6 wharf.

The "Trinity Bay" was brought to Brisbane for annual overhaul on 27th May.

Cooktown.

The reconstruction of the Railway Wharf was completed at a total cost of £1,655 5s. 7d., of which £42 12s. 6d. was expended in 1934-35. An extension of the wharf of 20-ft. in length was also constructed at a cost of £1,079 12s. 1d.

Surveys.

A complete examination of the Brisbane River channels was made during July and August. Many minor surveys and setting-out of works, levels, etc., were necessary in connection with Brisbane River dredging.

The entrance channels to Moreton Bay were examined after the heavy weather at the end of March and the beginning of April, and the North-East Channel were again examined in July last.

As previously mentioned, surveys were made at Burnett River and Wide Bay Bar.

Dredge Plant and Work at the Dry Dock.

The strengthening of the superstructure carrying the top tumbler and gearing of the "Platypus II" was completed on 13th July, 1935, and twelve months' work in hard material—rock, etc.—shows that the alterations are effective, no signs of the former weaknesses being apparent.

The usual annual docking and overhaul of the "Trinity Bay" was carried out for the Cairns Harbour Board, and all repairs and renewals required by the Board's engineer and the Marine Board's surveyors were effected to their satisfaction.

The "Remora" was docked for annual overhaul and the fitting of new suction trailer pipes, including new trunnion bend, journals, and connecting pipes and bends between the after ends of suction trailer pipes and dragmouth. The new main dredging pumps in stock were installed at the same time, and the necessary repairs to the hopper well structure effected. New hopper discharge pipes and distributing boxes and delivery chutes were made during the year for installing at the next overhaul.

The recently purchased "Morwong" was overhauled in January, 1936, and was again docked in April, 1936, for cleaning, painting, inspection, and repairs and renewals necessary

for the voyage to Darwin and dredging thereat for the Commonwealth Government.

The necessary mild steel suction and discharge pipes and flexible sleeves for the "Remora" have been made during the year, and spare discharge pipes and sleeves for the "Morwong." The repairs and renewals necessary on the "Maryborough" and the attendant barges "Bonito" and "Stingaree" were completed, and the vessels despatched to Bowen, where they have been working satisfactorily up to the present time.

The "Hydra," which took up the "Maryborough's" work during the latter's overhaul and absence at Bowen, was overhauled in April, 1936, and is working satisfactorily.

The steam hopper barges, "Casuarina," "Dugong," "Seal," "Pumba," "Bream," and "Dolphin," have been kept in good working order throughout the year.

The various tugs, anchor launches, grab dredges, dumb hopper barges, and stone punts have been properly maintained during the last twelve months.

All the necessary dockings and overhauls of the Government steamers, "Matthew Flinders," "John Oxley," and "Champion," were carried out; also those of the "Otter" and Dunwich punt.

The renewals and repairs of swivels, shackles, chains, etc., for the Marine Branch bays and beacons were effected throughout the year.

The expenditure on overhauls and upkeep, including that on the dredge from Cairns and other Government vessels, has been as follows:—

	£	s.	d.
Shop work	4,222	17	2
Wages paid direct	19,538	12	7
Materials used	6,562	19	8
Total	30,324	9	5

Dry Dock.

Forty vessels, excluding launches, were docked during the year, of the following aggregate gross tonnage:—

	Tons
Government vessels other than dredge plant	5,090
Government vessels—dredge plant	13,558
All others	8,606
Gross Tons	27,254

In the previous year thirty-seven vessels were docked.

Harbour Dues.

Dues on goods are collected at all ports, except St. Lawrence and Dungeness, under "The Harbour Boards Act, 1892." The total amount paid into the Trust Accounts at the Treasury was £142,875 18s. 6d., compared with £131,022 9s. 11d. last year.

The several Harbours Boards under the same Act collected £161,265 10s. 11d.

Maritime Passenger Stations

Further Comment

The following contribution to the discussion arising out of the lecture on Maritime Passenger Stations, published in the March issue, is extracted by permission from the Journal of the Institute of Transport.

Mr. F. B. Taylor (Graduate).—A visitor to any of the continental ports mentioned by the author must have been impressed with the disparity between the accommodation provided for passengers there and in this country.

Everyone will agree that the general principles laid down in Dr. Cunningham's paper represent an ideal, if it were possible in practice to apply his qualification of "ignoring individual complications." His first three principles are probably the most far-reaching, and it would be of interest if their applicability to Southampton were considered. Recapitulating, the principles in question were briefly:—(1) Passenger and goods traffics should be separated where possible; (2) where both traffics must be dealt with, double-storey sheds should be constructed, the upper storey being allocated entirely to passenger traffic; (3) the standard of architecture and amenities should be equal to that of metropolitan railway termini. Steam heating should be provided.

At Southampton passengers use accommodation suitable for either passenger or cargo purposes, and it is possible to berth 30 modern ocean-going liners. The majority of vessels terminate and commence their voyage at the port, and often inward-bound passengers remain on board until all baggage has been landed and sorted. Their acquaintance with the cargo shed is limited therefore to the Customs examination and the demand for waiting room and similar accommodation is restricted to "friends of passengers" awaiting the ship's arrival. Passengers

for outward-bound vessels pass straight from special train to ship.

In nearly every case, therefore, the demand for waiting-rooms and other amenities is strictly limited, and considerable capital expenditure would be necessary to provide any appreciable improvement to existing conditions. The cost of such measures would be difficult to justify financially for while the total number of passengers passing through the port during the peak year of 1930 was 544,446, at a reasonably sized London terminus this number would be dealt with in one week. The disparity between the two cases is further emphasised by the fact that provision would have to be made for "peak" sailings as for peak traffic in railway termini, but with the difference that, whereas extra accommodation in the latter case is confined largely to track facilities, in docks this accommodation would be structural. What this would involve can be illustrated by recalling that at Southampton thirteen liners (in addition to eleven cross-Channel steamers) were dealt with on August 22nd, 1936; but this does not represent the full extent if the company's liabilities, as it would probably be necessary to provide railway terminus amenities to nearly every berth in the docks to give full effect to the principle laid down.

It should be appreciated that any material improvement to existing facilities would involve much capital lying idle for considerable periods and, although no one will deny the weight of Dr. Cunningham's argument that first impressions count with a visitor to any country, the point of view of a dock company must be that expenditure to encourage new traffic can be incurred only so far as it will be remunerative. Beyond that point, additional expenditure should be regarded in the light of "national propaganda," which is of national concern rather than the burden of an individual dock company. This view surely has been the guiding principle on the Continent, notably in France and Italy, where without State aid the ornamental buildings and elaborate facilities of the ports of those countries would not exist to invite contrast with the ports of Great Britain.

Publications

SOUTHAMPTON DOCKS.

A copy has been received of the 1937 Handbook of Rates, Charges and General Information relating to the Southampton Docks, published by the Southern Railway Co. at the price of sixpence. It is a compendium of useful information relating to the Southern Port, containing within its 130 pages a very complete statement of the accommodation, cargo handling facilities and all matters essential to shippers, traders and users of the port generally. There are interesting articles on the local trade and traffic accompanied by statistics which give a very favourable impression of the progress achieved. The volume is artistically illustrated and includes a coloured plan of the docks.

RIVER PLATE PORTS.

Editorial Mar (Casilla de Correo, 1080, Buenos Aires), have issued the 1937 Edition of the "Mar" Year Book or River Plate Shipping Manual. This is the sixth production and in addition to bringing the former material up to date, there are a number of new features, the whole of which should be very serviceable to those who trade with Argentine and Uruguayan ports on the River Plate. The volume contains 356 pages, well packed with information on port accommodation, facilities, charges, customs regulations, and documents, in addition to which there are 18 plans and charts of the ports described. The price is 7 Argentine paper dollars in Argentina, or 10/6, including postage to Great Britain.

CANADIAN PORT DIRECTORY.

The 1936 Edition of the "Canadian Ports and Shipping Directory" (National Business Publications, Limited, Garden-vale, Que., \$5 post free in Canada and the United States, and 20/- in Great Britain), the third to be published, contains essential details regarding the facilities provided at 281 Canadian ports. This information covers the location of the port, its population, trade, port authority, berthing accommodation for shipping and depths of water alongside docks, facilities for loading and discharging, tidal range, channel depths, pilotage, towing facilities, supplies and bunkering, port charges, repair facilities, Customs and Health, shipping agents and stevedores, sailing directions, etc.—all the facts likely to be sought by ship-owners, charterers, brokers, insurance agents, ship masters and others interested in trade into or out of Canada's ports whether they be on the Atlantic, Great Lakes or Pacific.

The directory has been compiled by Frederick William Wallace, well-known as a Canadian marine and fisheries authority and author of several books on seafaring matters, and checked by the respective port authorities. The present edition comprises 306 pages, 30 illustrations and 3 large folding maps, all ports being listed in alphabetical order for ready reference.

MACKAY, AUSTRALIA.

We have received an illustrated souvenir of the City and District of Mackay, North Queensland, Australia, designated "The Sugaropolis of Australia." It is published by the "Mercury" Service Department and is an illustrated and historical record of the progress and development of the City and district during the first 75 years of its existence from 1862 to 1937.

It is interesting to note that Captain John Monro Mackay occupied in 1889 the position of Harbourmaster at Brisbane, subsequently in 1902 becoming Chief of the Queensland Marine Department, holding the offices of Port Master of Queensland and Chairman of the Marine Board.

The sugar industry comes in for important notice as the essential activity of the neighbourhood. There is also an account of the development of Mackay as a Port.

It will be recalled that in our February issue there appeared a statement respecting impending developments in this connection.

We have received a copy of "The Spencer Times," which gives interesting details of varied Conveying, Storing and Handling Plant and Machinery. The paper is well illustrated, and anyone interested in machinery of this nature can obtain a copy by writing direct to:—Messrs. Spencer (Melksham) Ltd., Melksham, Wilts.

Shipping at Finnish Ports.

According to statistics published by the Board of Navigation, shipping at Finnish ports during 1936 was lively, showing a total of 24,921 vessels of 19,929,661 net reg. tons arriving and departing as again 21,961 vessels of 17,143,758 tons during 1935.

Traffic of French Seaports in 1936

The statistics published by the Ministry for Public Works show that the total of merchandise traffic of French sea ports amounted to 48,484,133 tons in 1936, as against 45,314,236 tons in 1935, an increase of 3,169,897 tons. The total for last year is higher than for the years 1934, 1933 and 1932 and almost reaches the figures recorded in 1931 (49,025,304 tons). It may be recalled that in 1929 the total amounted to 52,353,235 tons.

The net registered tonnage of vessels entered and cleared amounted to 143,357,453 tons, as against 141,416,058 tons in 1935 and the total number of passengers to 4,979,717, an increase of 1,345,242 on the figures for 1935 and a higher total even than the previous record of 1929 (4,227,770).

The following table gives details as to the weight of goods entered and cleared, tonnage and number of vessels, and number of passengers (with the figures for 1935 for comparison):—

ENTERED		1936	1935
Goods (tons) ...	...	36,711,073	33,470,700
Ships (tonnage) ...	...	71,840,301	70,937,280
Ships (number) ...	...	85,606	83,332
Passengers (number)...	...	2,524,689	1,822,178
CLEARED			
Goods (tons) ...	...	11,773,000	11,848,563
Ships (tonnage) ...	...	71,517,142	70,478,778
Ships (number) ...	...	85,119	83,003
Passengers (number)...	...	2,455,098	1,812,924

As regards the merchandise traffic of the principal ports, Marseilles maintained the leading position, which it lost in 1934, but recovered in 1935, with 9,251,319 tons of goods as against 8,232,575 tons in 1935.

The following table shows the results for the leading ports:

		1936	1935
		Tons	Tons
Marseilles ...	...	9,251,319	8,232,575
Rouen ...	...	8,200,404	7,986,887
Le Havre ...	...	5,775,681	5,409,018
Dunkerque ...	...	4,600,088	4,350,600
Bordeaux ...	...	4,302,201	4,088,050
Nantes and St. Nazaire ...	...	3,420,535	2,907,784
Caen ...	...	1,788,108	1,676,748
Boulogne ...	...	1,177,100	1,047,321
Sète ...	...	1,161,977	1,142,144

As regards tonnage of shipping entered and cleared, Marseilles remained far ahead with 32,905,068 tons (16,544,728 tons entered and 16,450,340 tons cleared) as against a total of 33,925,072 tons in 1935. There was, however, a slight fall as compared with the previous year. Havre came second, but far behind with 23,112,071 tons and was followed by Cherbourg, Dunkerque, Bordeaux, etc.

In the case of river traffic, Rouen, as in previous years came well ahead with 4,578,943 tons (imports 702,917 tons; exports 3,875,936). This traffic was slightly lower in 1935 (4,959,773 tons).

It may be noted that unlike seaborne traffic the total river traffic of the principal ports in France fell slightly in 1936 with 10,043,543 tons as against 10,585,939 tons.

The total general traffic, seaborne and river, was higher than in 1935 with 58,527,676 tons (entered 39,736,935 tons, cleared 18,790,741 tons) as against 55,905,232 tons in 1935. In this respect Rouen came first of all French ports with 12,581,347 tons as against 12,946,060 tons and Marseilles second with 9,629,021 tons as against 8,594,783 tons, followed by Le Havre, Bordeaux, Nantes, St. Nazaire, Caen, etc.

Book Review

We have received from the Board of Engineers for Rivers and Harbours of the War Department, United States, copies of Reports on the Ports of Jacksonville, Miami and Tampa in Florida, and the Ports of Stockton and Sacramento in California, forming a compilation published in connection with the Port Series issued by the Board of Engineers and the United States Maritime Commission. The present reports are revisions of data published in previous issues, and they afford full information regarding harbour conditions; port customs and regulations; services and charges; fuel and supplies; and the facilities available for commerce and shipping. Tables are included showing in detail the foreign and domestic water-borne commerce at the ports during the period 1926 to 1935. Other information is given in regard to the nature and destination of imports and exports. The volumes should be of suitable interest and value to those engaged in shipping operations on the American seaboard.